

3561-SCU-111

0043946

DON'T SAY IT --- Write It!

DATE: September 1, 1993

TO: File 3561-SCU-111

FROM: Linda J. Dickerson

H4-19

Telephone: 372-2895

cc: 3395-SCU-078

SUBJECT: Validation Summary Final Report

Final validation report for this package is filed with 3395-SCU-078



SDG Memo/Sample Summary

Client Name: WESTINGHOUSE HANFORD CO. **Date:** 16 Mar 1993
Project Name: 92-451 **Update No.:**
SDG No.: 3561 **Work Order No.:** 32359-79
Project Manager: J. DEWALD
Mail Date:

Client Samp No.	S-Cubed Samp No.	Date Rcvd	Date Samp	Matrix	ANIONS	CRVI	FURNILM	HERBST	HGILM	ICPILM	NO3/NO2	OCPOLM	OPP8140	SVOAOLM	TRPH	VOAOLM
B07KR7	3561-01	2-20-1993	2-16-1993	SOIL	X	X	X	X	X	X	X	X	X	X	X	X
B07KR7MS	3561-01MS	2-20-1993	2-16-1993	SOIL	X	X	X	X	X	X	X	X	X	X	X	X
B07KR7MSD	3561-01MSD	2-20-1993	2-16-1993	SOIL				X				X	X	X		X
B07KR7REP	3561-01REP	2-20-1993	2-16-1993	SOIL	X	X	X		X	X	X				X	

(X) = Non-Billable Sample

NARRATIVE


March 16, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

VOLATILES

The samples were analyzed according to the OLM01.8 Statement of Work. The samples were analyzed within holding time constraints, and the lab blank was free of significant contamination. No TIC's were detected in sample B07KR7 and 8-ppb of acetone was the only target compound found. All surrogate recoveries were well within method specified QC limits.

The quality control results were acceptable. The LCS recoveries were excellent, as were the recoveries and RPD's for B07KR7 MS/MSD. The initial and continuing calibration data are also compliant.


John DeWald
Project Manager

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NARRATIVE

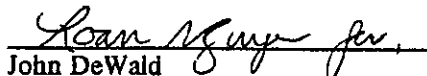
March 13, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

SEMIVOLATILES

The samples were analyzed according to the OLM01.8 Statement of Work. The analyses were non-problematic and the sample was relatively clean. No target analytes were found in the sample, and it was extracted and analyzed within holding time constraints. Only a few unidentifiable TIC's were detected in the sample and lab blank was free of significant contamination.

The quality control results were acceptable. The LCS recoveries were within QC limits, as were the recoveries and RPD's for the MS/MSD set. All surrogate recoveries passed, and the initial and continuing calibration data are compliant. Please note that Di-n-octylphthalate was added to the matrix spiking solution. The results are reported on Form I, flagged with an "X", but no recovery data are included on Form III.


John DeWald
Project Manager

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NARRATIVE


March 19, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

ORGANOCHLORINE PESTICIDES/PCBs

The samples were analyzed according to SW-846 Method 8080. All samples were clean. No problems were encountered with these analyses.

The quality control results were acceptable. Surrogate results were acceptable. LCS results were excellent. Matrix results were acceptable. Calibration results were acceptable.


John DeWald
Project Manager

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NARRATIVE

March 19, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

ORGANOCHLORINE HERBICIDES

The samples were analyzed according to SW-846 Method 8150. Several problems were encountered with this analysis. Initial sample preparation was carried out within holding times. Analytical results indicated that the field sample was spiked with the matrix compounds. Corrective action in the form of reextraction was carried out, three days past the holding time.

Both extraction blanks yielded false positive hits for 2,4 DB. The quantitative values obtained from the two columns differed by greater than 130 % indicating that this identification is probably incorrect. Corrective action has been initiated to determine the source of this problem.

Surrogate results were excellent. LCS results were excellent. Matrix results were fine for most of the analytes. 2,4 DB was found at a higher level in the unspiked sample than in the MS/MSD due to the above mentioned interference. Calibration results were acceptable.

The one sample analyzed yielded hits for 2,4 D and 2,4 DB which are likely false positives due to the high percent differences in the quantitative values obtained from the two columns. As stated above the 2,4 DB was detected in the blanks.


John DeWald
Project Manager

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NARRATIVE

March 19, 1993

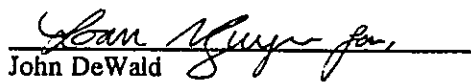
Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

ORGANOPHOSPHATE PESTICIDES

The samples were analyzed according to SW-846 Method 8140. No significant problems were encountered with these analyses. Please note that the surrogate (Ethion) and Sulprofos coelute on the quantitation column, thus second column results are presented for these compounds

The one sample analyzed was clean.

The quality control results were generally acceptable. Surrogate results were excellent. LCS results were excellent. Matrix results were fine with the exception of a poor reproducibility of Sulprofos. Calibration results were acceptable. Please note Nalad utilized a three point calibration curve due to poor response at the lower end of the calibration curve.


John DeWald
Project Manager

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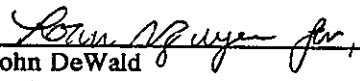
NARRATIVE

March 16, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

TRPH

The samples were analyzed according to EPA Method 418.1 for TRPH. There were no difficulties with the analyses. The quality control results were acceptable. MS and %RPD recoveries were within the control limits


John DeWald
Project Manager

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NARRATIVE

March 16, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

METALS

The samples were analyzed according to the ILM.02.1 Statement of Work for the CLP list. Analytes of interest were detected in the sample. The quality control results were generally acceptable. MS recoveries were low for Sb, As, and Tl. %RPD were within the control limits. All soil LCS recoveries were within the advisory ranges.

ANIONS


The samples were analyzed according to EPA Method 300.0 for anions. For soil, 9 gm of sample was leached into 45 ml of DI Type II water prior to IC analysis. The quality control results were acceptable. MS and %RPD recoveries were within the control limits.

Cr VI

The samples were analyzed according to SW-846 Method 7196 for Cr VI. For soil, 20 gm of sample was leached into 100 ml of DI Type II water prior to analysis. The sample required a dilution factor of 100 prior to analysis due to matrix interferences. The quality control results were acceptable. MS and %RPD recoveries were within the control limits.

NO₃/NO₂

The samples were analyzed according to EPA Method 353.3 for NO₃/NO₂. The sample required a dilution factor of 2 due to high concentration level exceeds the linear range. The quality control results were acceptable. MS and %RPD recoveries were within the control limits.


John DeWald
Project Manager

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LOT # 3561

Westinghouse
Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator Jonathan G. Lucas
Company Contact Frank W. Gustafson
Project Designation/Sampling Locations North Slope ERA-
H-07-H
Ice Chest No. RM #22
Bill of Lading/Airbill No. 2S36953441
Method of Shipment EMERY
Shipped to S-Cube San Diego, CA
Possible Sample Hazards/Remarks -

Telephone 509-376-1736
Collection Date 2-16-93
Field Logbook No. EPL-1031-2
Offsite Property No. W93-D-0285 #7

Sample Identification

BOTKR7 - Soil Sample
1 - 120 ml g Sept
1 - 120 ml g
3 - 120 ml g

☐ Field Transfer of Custody

Chain of Possession

(Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
<u>Jonathan G. Lucas</u>			<u>Amy Smith</u>	<u>2/20/93</u>	<u>12:30 PM</u>

Final Sample Disposition

Disposal Method:

Disposed by:

Date/Time:

Comments:

A-6000-406 (06/91)

OK 2-19-93 "Saturday Next Day Delivery"

Contractor Westinghouse Hambro Co.	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) W93-0-0285#7
--	------------------------------	---

PART I - TO BE COMPLETED BY ORIGINATOR

Department <i>Environ. Eng.</i>	Section <i>Site Remediation</i>	Unit
The following items are to be shipped from		<input type="checkbox"/> Contractor <input type="checkbox"/> Vendor
Routing		<input type="checkbox"/> Contractor <input type="checkbox"/> Vendor
Shipped to <i>S - Cubed 3398 Carmel Mt. Rd. San Diego, CA 92121-1075</i>	Off-site Custodian <i>John Dewald</i>	
Full Title		
Quantity <i>1</i> <i>25 lbs</i>	Description (Include Serial and any Government Tag Numbers) <i>Polyicechest (RM#22) containing glass sample containers of soil packed in wet ice and vermiculite. Sample # B07KRT</i>	Original Cost

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Program not available onsite.

Bill of Lading 2536953441

RECEIVED

FEB 19 1993

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING

RM Clearance for Public Release <i>OK</i>	RM Survey No <i>5060</i>	PROPERTY RECORDS Date <i>2-19-93</i>
Location of Property (Area & Bldg.) <i>North Slope ERI - H-07-H</i>	Contact <i>Frank W. Gustafson</i>	Phone <i>376-1736</i>
Date Ready for Shipment <i>2-18-93</i>	Cost Code to be Charged <i>PD42A 81353</i>	Approximate Date This Property will be Returned <i>N/A</i>
Originated By <i>V.G. Lucas</i>	Date <i>2-18-93</i>	Authorized By <i>[Signature]</i>
Signature and Name of Property Control	Custodian Date <i>[Signature]</i>	Property Management Approval <i>[Signature]</i>
		Date <i>2/19/93</i>

PART II - TO BE COMPLETED BY SHIPPING

Signature of Recipient <i>C.R. [Signature]</i>	Return Order No.	Date Issued <i>2-19-93</i>	Purchase Order No.	Date Issued
Date <i>2-19-93</i>				

DISTRIBUTION

By Originator White, Green, Yellow, Pink - Property Management Goldenrod - Retain	Shipping Operation - Sign all Copies and Forward to: White - Property Management Yellow - Retain	Green - Property Control Custodian (Issuing Office) Pink - Originator
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13

EASE TYPE OR USE BALL POINT PEN, BEAR DOWN FIRMLY!
EP MARKS WITHIN BOXES TO ASSURE ACCURACY

FORM OF PAYMENT				EMERY WORLDWIDE		A CF Company	
Check <input type="checkbox"/> C.O.D. <input type="checkbox"/> <input type="checkbox"/> F.C.C.O.D. <input type="checkbox"/> Bill to Shipper <input checked="" type="checkbox"/> Bill to Consignee <input type="checkbox"/> Third Party Billing <input type="checkbox"/>				UNITED STATES / CANADA <input type="checkbox"/> Second Day (Extra Charges) <input type="checkbox"/> AM <input type="checkbox"/> PM <input type="checkbox"/> Second Day <input checked="" type="checkbox"/> Saturday Delivery		Express <input type="checkbox"/> Standard Plus <input type="checkbox"/> Preferred <input type="checkbox"/> Standard <input type="checkbox"/> Business Documents <input type="checkbox"/> Customs Clearance <input type="checkbox"/> Delivery <input type="checkbox"/>	
Shipper's Account Number E 850281585				Date 02-19-93		Origin PSC	
From: WESTINGHOUSE SHIPPING DEPT. (509) 376-6665 U.S. DEPARTMENT OF ENERGY C/O WESTINGHOUSE HANFORD BLDG 1163 2355 STEVENS DRIVE RICHLAND WA				To: JOHN DEWALD S-CUBED 3398 CARMEL MT. ROAD SAN DIEGO CA		Shipper's Handling 253695344 1	
Customer's Reference Numbers WB1353 PD42A W93-0-028547				Consignee's Account Number E 99352		92121-1095	
Description 1 ICE CHEST RM#22 SOIL SAMPLES		Dimensions Pcs 1 L 20 W 16 H 17		Total Pieces 1		Total Weight (lbs) 25	
Remarks B07KR7 SATURDAY DELIVERY		Zip Ship <input type="checkbox"/>		Mark if Emery Packaging is used Urgent Letter <input type="checkbox"/> Urgent Pack <input type="checkbox"/>		FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)	
Shipper's Signature X		For shipments within the 80 United States Shipper has the option to check this box and, by checking, agree that the Zip Ship conditions, described in the area to the right, apply.		Declared Value \$		2536953441 	
International Shipments From Domestic <input type="checkbox"/>		Third Party Account Number E		International Customs Value		International Insurance	
Commodity Code		Third Party Account Number mandatory for Third Party Billing		Total Transportation Charges		Other Charges/Advance at Origin <input type="checkbox"/> OCAD \$	
Basic Charge		International Customs Value		International Insurance		Terms and Conditions on back	

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 SHPT.
 NO.
 TAB

CONSIGNEE — PACKAGE COPY — 4



NARRATIVE

March 16, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

VOLATILES

The samples were analyzed according to the OLM01.8 Statement of Work. The samples were analyzed within holding time constraints, and the lab blank was free of significant contamination. No TIC's were detected in sample B07KR7 and 8-ppb of acetone was the only target compound found. All surrogate recoveries were well within method specified QC limits.

The quality control results were acceptable. The LCS recoveries were excellent, as were the recoveries and RPD's for B07KR7 MS/MSD. The initial and continuing calibration data are also compliant.

A handwritten signature in cursive script, appearing to read 'J. DeWald', is written over a horizontal line.

John DeWald
Project Manager

enclosures

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11
Am
3-20

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7

Lab Name: S-CUBED	Contract: 32359-79	
Lab Code: S3	Case No.: 92-451	SAS No.: SDG No.: 3561
Matrix: (soil/water) SOIL	Lab Sample ID: 3561-01	
Sample wt/vol: 5.00 (g/ml)G	Lab File ID: CW101	
Level: (low/med) LOW	Date Received: 02/20/93	
%Moisture: not dec. 9.41	Date Analyzed: 02/25/93	
GC Column: PACK ID: 2.00 (mm)	Dilution Factor: 1.00	
Soil Extract Volume: (uL)	Soil Aliquot Volume: (uL)	

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
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74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11	U
67-64-1	Acetone	8	J
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethyl Benzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

Sample Number

B07KR7

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NO TOC'S FOUND	VOA		
2.				
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NARRATIVE

March 13, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

SEMIVOLATILES

The samples were analyzed according to the OLM01.8 Statement of Work. The analyses were non-problematic and the sample was relatively clean. No target analytes were found in the sample, and it was extracted and analyzed within holding time constraints. Only a few unidentifiable TIC's were detected in the sample and lab blank was free of significant contamination.

The quality control results were acceptable. The LCS recoveries were within QC limits, as were the recoveries and RPD's for the MS/MSD set. All surrogate recoveries passed, and the initial and continuing calibration data are compliant. Please note that Di-n-octylphthalate was added to the matrix spiking solution. The results are reported on Form I, flagged with an "X", but no recovery data are included on Form III.



John DeWald
Project Manager

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11 Apr 93

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7

Lab Name: S-CUBED Contract: 32359-79
Lab Code: S3 Case No.: 92-451 SAS No.: SDG No.: 3561
Matrix: (soil/water) SOIL Lab Sample ID: 3561-01
Sample wt/vol: 30 (g/ml) G Lab File ID: W6101
Level: (low/med) LOW Date Received: 02/20/93
%Moisture: 9.41 decanted: (Y/N) N Date Extracted: 02/23/93
Concentrated Extract Volume: 1000.00 (uL) Date Analyzed: 03/08/93
Injection Volume: 1.00 (uL) Dilution Factor: 1.00
GPC Cleanup: (Y/N) Y pH: 8.84

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NO. COMPOUND Q

108-95-2	Phenol	730	U
111-44-4	bis(2-Chloroethyl) ether	730	U
95-57-8	2-Chlorophenol	730	U
541-73-1	1,3-Dichlorobenzene	730	U
106-46-7	1,4-Dichlorobenzene	730	U
95-50-1	1,2-Dichlorobenzene	730	U
95-48-7	2-Methylphenol	730	U
108-60-1	2,2'-oxybis(1-Chloropropane)	730	U
106-44-5	4-Methylphenol	730	U
621-64-7	N-Nitroso-di-n-propylamine	730	U
67-72-1	Hexachloroethane	730	U
98-95-3	Nitrobenzene	730	U
78-59-1	Isophorone	730	U
88-75-5	2-Nitrophenol	730	U
105-67-9	2,4-Dimethylphenol	730	U
111-91-1	bis(2-Chloroethoxy) methane	730	U
120-83-2	2,4-Dichlorophenol	730	U
120-82-1	1,2,4-Trichlorobenzene	730	U
91-20-3	Naphthalene	730	U
106-47-8	4-Chloroaniline	730	U
87-68-3	Hexachlorobutadiene	730	U
59-50-7	4-Chloro-3-methylphenol	730	U
91-57-6	2-Methylnaphthalene	730	U
77-47-4	Hexachlorocyclopentadiene	730	U
88-06-2	2,4,6-Trichlorophenol	730	U
95-95-4	2,4,5-Trichlorophenol	1800	U
91-58-7	2-Chloronaphthalene	730	U
88-74-4	2-Nitroaniline	1800	U
131-11-3	Dimethylphthalate	730	U
208-96-8	Acenaphthylene	730	U
606-20-2	2,6-Dinitrotoluene	730	U
99-09-2	3-Nitroaniline	1800	U
83-32-9	Acenaphthene	730	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7

Lab Name: S-CUBED Contract: 32359-79
 Lab Code: S3 Case No.: 92-451 SAS No.: SDG No.: 3561
 Matrix: (soil/water) SOIL Lab Sample ID: 3561-01
 Sample wt/vol: 30 (g/ml) G Lab File ID: W6101
 Level: (low/med) LOW Date Received: 02/20/93
 %Moisture: 9.41 decanted: (Y/N) N Date Extracted: 02/23/93
 Concentrated Extract Volume: 1000.00 (uL) Date Analyzed: 03/08/93
 Injection Volume: 1.00 (uL) Dilution Factor: 1.00
 GPC Cleanup: (Y/N) Y pH: 8.84

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/kg Q

51-28-5	2,4-Dinitrophenol	1800	U
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	730	U
121-14-2	2,4-Dinitrotoluene	730	U
84-66-2	Diethylphthalate	730	U
7005-72-3	4-Chlorophenyl-phenyl ether	730	U
86-73-7	Fluorene	730	U
100-01-6	4-Nitroaniline	1800	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	730	U
101-55-3	4-Bromophenyl-phenylether	730	U
118-74-1	Hexachlorobenzene	730	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	730	U
120-12-7	Anthracene	730	U
86-74-8	Carbazole	730	U
84-74-2	Di-n-butylphthalate	730	U
206-44-0	Fluoranthene	730	U
129-00-0	Pyrene	730	U
85-68-7	Butylbenzylphthalate	730	U
91-94-1	3,3'-Dichlorobenzidine	730	U
56-55-3	Benzo(a)anthracene	730	U
218-01-9	Chrysene	730	U
117-81-7	Bis(2-Ethylhexyl)phthalate	730	U
117-84-0	Di-n-octylphthalate	730	U
205-99-2	Benzo(b)fluoranthene	730	U
207-08-9	Benzo(k)fluoranthene	730	U
50-32-8	Benzo(a)pyrene	730	U
193-39-5	Indeno(1,2,3-cd)pyrene	730	U
53-70-3	Dibenz(a,h)anthracene	730	U
191-24-2	Benzo(g,h,i)perylene	730	U

Organics Analysis Data Sheet
(Page 4)

Sample Number
BC7KR7

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT/Scan Number	Estimated Concentration (ug/l or ug/kg)
100123-42-2	2-ACETAMINONE 4-HYDROXY-4-METH	BWA	6.96	340078N
2.	CHLORALHYDRATE	"	35.71	360 J
3.	"	"	36.66	330 J
4.	"	"	37.56	360 J
5.	CHLORALHYDRATE	"	37.43	340 J
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NARRATIVE

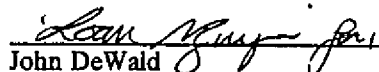
March 19, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

ORGANOCHLORINE PESTICIDES/PCBs

The samples were analyzed according to SW-846 Method 8080. All samples were clean. No problems were encountered with these analyses.

The quality control results were acceptable. Surrogate results were acceptable. LCS results were excellent. Matrix results were acceptable. Calibration results were acceptable.


John DeWald
Project Manager

enclosures

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1A
3-22-93

1D
PESTICIDE SOIL ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7

Lab Name: S-CUBED Contract: 32359-79
 Lab Code: S3 Case No.: 92-451 SAS No.: SDG No.: 3561
 Matrix: (soil/water) SOIL Lab Sample ID: 3561-01
 Sample wt/vol: 30 (g/ml) G Lab File ID: R0224-9DB608075
 %Moisture: 9.41 decanted: (Y/N) N Date Received: 02/20/93
 Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 02/23/93
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 03/05/93
 Injection Volume: 1.00 (uL) Dilution Factor: 1.00
 GPC Cleanup: (Y/N) Y pH: 8.84 Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NO. COMPOUND Q

319-84-6	alpha-BHC	1.88	U
319-85-7	beta-BHC	1.88	U
319-86-8	delta-BHC	1.88	U
58-89-9	gamma-BHC (Lindane)	1.88	U
76-44-8	Heptachlor	1.88	U
309-00-2	Aldrin	1.88	U
1024-57-3	Heptachlor epoxide	1.88	U
959-98-8	Endosulfan I	1.88	U
60-57-1	Dieldrin	3.64	U
72-55-9	4,4'-DDE	3.64	U
72-20-8	Endrin	3.64	U
33213-65-9	Endosulfan II	3.64	U
72-54-8	4,4'-DDD	3.64	U
1031-07-8	Endosulfan sulfate	3.64	U
50-29-3	4,4'-DDT	3.64	U
72-43-5	Methoxychlor	18.8	U
53494-70-5	Endrin ketone	3.64	U
7421-36-3	Endrin Aldehyde	3.64	U
5103-71-9	alpha-Chlordane	1.88	U
5103-74-2	gamma-Chlordane	1.88	U
8001-35-2	Toxaphene	188	U
12674-11-2	Aroclor-1016	36.4	U
11104-28-2	Aroclor-1221	73.9	U
11141-16-5	Aroclor-1232	36.4	U
53469-21-9	Aroclor-1242	36.4	U
12672-29-6	Aroclor-1248	36.4	U
11097-69-1	Aroclor-1254	36.4	U
11096-82-5	Aroclor-1260	36.4	U

FORM I PEST

3/90

NARRATIVE

March 19, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

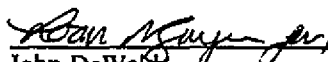
ORGANOCHLORINE HERBICIDES

The samples were analyzed according to SW-846 Method 8150. Several problems were encountered with this analysis. Initial sample preparation was carried out within holding times. Analytical results indicated that the field sample was spiked with the matrix compounds. Corrective action in the form of reextraction was carried out, three days past the holding time.

Both extraction blanks yielded false positive hits for 2,4 DB. The quantitative values obtained from the two columns differed by greater than 130 % indicating that this identification is probably incorrect. Corrective action has been initiated to determine the source of this problem.

Surrogate results were excellent. LCS results were excellent. Matrix results were fine for most of the analytes. 2,4 DB was found at a higher level in the unspiked sample than in the MS/MSD due to the above mentioned interference. Calibration results were acceptable.

The one sample analyzed yielded hits for 2,4 D and 2,4 DB which are likely false positives due to the high percent differences in the quantitative values obtained from the two columns. As stated above the 2,4 DB was detected in the blanks.


John DeWald
Project Manager

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10
April
3-22-93

1D
HERBICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7BX^N

Lab Name: S-CUBED Contract: 32359-79
Lab Code: S3 Case No.: 92-451 SAS No.: SDG No.: 3561
Matrix: (soil/water) SOIL Lab Sample ID: 3561-01RX^N
Sample wt/vol: 5 (g/ml) G Lab File ID: H0310-4DB608024
%Moisture: 9.41 decanted: (Y/N) N Date Received: 02/20/93
Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 03/05/93
Concentrated Extract Volume: 5000 (uL) Date Analyzed: 03/11/93
Injection Volume: 1.00 (uL) Dilution Factor: 1.00
GPC Cleanup: (Y/N) N pH: 8.84 Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg Q

94-75-7	2,4-D	245	
94-82-6	2,4-DB	1210	B
93-76-5	2,4,5-T	27.5	U
93-72-1	2,4,5-TP	27.5	U
88-85-7	Dinoseb	27.5	U
120-36-5	Dichlorprop	55.1	U
1918-00-9	Dicamba	55.1	U

FORM I HERB

3/90

NARRATIVE

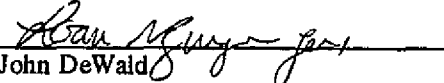
March 19, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

ORGANOPHOSPHATE PESTICIDES

The samples were analyzed according to SW-846 Method 8140. No significant problems were encountered with these analyses. Please note that the surrogate (Ethion) and Sulprofos coelute on the quantitation column, thus second column results are presented for these compounds. The one sample analyzed was clean.

The quality control results were generally acceptable. Surrogate results were excellent. LCS results were excellent. Matrix results were fine with the exception of a poor reproducibility of Sulprofos. Calibration results were acceptable. Please note Nalad utilized a three point calibration curve due to poor response at the lower end of the calibration curve.


John DeWald
Project Manager

enclosures

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11
Done
3/22/93

1D
PESTICIDE SOIL ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7

Lab Name: S-CUBED Contract: 32359-79
 Lab Code: S3 Case No.: 92-451 SAS No.: SDG No.: 3561
 Matrix: (soil/water) SOIL Lab Sample ID: 3561-01
 Sample wt/vol: 30 (g/ml) G Lab File ID: B0309-6DB1701018
 %Moisture: 9.41 decanted: (Y/N) N Date Received: 02/20/93
 Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 02/23/93
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 03/10/93
 Injection Volume: 1.00 (uL) Dilution Factor: 1.00
 GPC Cleanup: (Y/N) N pH: 8.84 Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NO. COMPOUND Q

115-90-2	Fensulfothion	91.7	U
13194-48-4	Ethoprop	18.4	U
150-50-5	Merphos	45.9	U
2921-88-2	Chlorpyrifos	18.4	U
298-00-0	Parathion-methyl	45.9	U
298-02-2	Phorate	18.4	U
298-04-4	Disulfoton	18.4	U
299-84-3	Ronnel	18.4	U
300-76-5	Naled	91.7	U
327-98-0	Trichloronate	36.7	U
333-41-5	Diazinon	18.4	U
34843-46-4	Tokuthion(Prothiofos)	18.4	U
35400-43-2	Bolstar(Sulprophos)	45.9	U
55-38-9	Fenthion	18.4	U
56-72-4	Coumaphos	45.9	U
62-73-7	Dichlorvos	18.4	U
7786-34-7	Mevinphos	36.7	U
8065-48-3	Dematon-O	68.8	U
8065-48-3A	Dematon-P	68.8	U
86-50-0	Azinphos methyl	114	U
961-11-5	Stirophos(Tetrachlorvinphos)	36.7	U



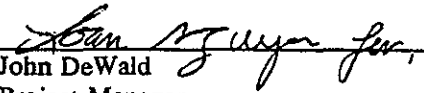
NARRATIVE

March 16, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

TRPH

The samples were analyzed according to EPA Method 418.1 for TRPH. There were no difficulties with the analyses. The quality control results were acceptable. MS and %RPD recoveries were within the control limits


John DeWald
Project Manager

enclosures

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11
5-22-93

Analyte: TRPH
 Method: 418.1
 Technique: IR Spec.
 DATE: 2/24/93
 Analyst: LC/EE
 Instr: P&E IR Spec.
 Case: 92-451
 Lot(s): 3561

Smpl Aliquot: 0.020 Kg or L
 Final Volume: 0.1 L

Concs: p.p.m.
 Reagent #1 20
 #2 40
 #3 80
 #4 160
 #5 300
 #6

Standards
 Source: S-CUBED/EL4250
 Corr. Coef. 0.99993

Detection Limit 20mg/kg

Std.	Abs	Conc
Blank	0	0
#1	0.037	20
#2	0.069	40
#3	0.135	80
#4	0.271	160
#5	0.51	300
#6		

S-Cubed Sample ID	Client Sample ID	Abs.	Conc. (ug/ml)	Dil. Factor	SAMPLE Conc.	Detection Limit	% Mois.	(mg/kg) Final CONC.
EBS0223	EBS0223	0	0.0000	1	0.0000	20	0	0
LCSS0223	LCSS0223	0.269	159.2353	1	796.1763	20	0	796
3561-01	B07KR7	0.022	13.0230	1	65.1148	20	9.41	72
3561-01REP	B07KR7REP	0.021	12.4310	1	62.1550	20	9.41	69
3561-01MS	B07KR7MS	0.304	179.9536	1	899.7680	20	9.41	993

3561 STRP. WQ1



NARRATIVE

March 16, 1993

Narrative Project: 92-451
Reference No.: 32359-79
Client: WHC
SDG No.: 3561

METALS

The samples were analyzed according to the ILM.02.1 Statement of Work for the CLP list. Analytes of interest were detected in the sample. The quality control results were generally acceptable. MS recoveries were low for Sb, As, and Tl. %RPD were within the control limits. All soil LCS recoveries were within the advisory ranges.

ANIONS

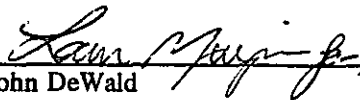
The samples were analyzed according to EPA Method 300.0 for anions. For soil, 9 gm of sample was leached into 45 ml of DI Type II water prior to IC analysis. The quality control results were acceptable. MS and %RPD recoveries were within the control limits.

Cr VI

The samples were analyzed according to SW-846 Method 7196 for Cr VI. For soil, 20 gm of sample was leached into 100 ml of DI Type II water prior to analysis. The sample required a dilution factor of 100 prior to analysis due to matrix interferences. The quality control results were acceptable. MS and %RPD recoveries were within the control limits.

NO₃/NO₂

The samples were analyzed according to EPA Method 353.3 for NO₃/NO₂. The sample required a dilution factor of 2 due to high concentration level exceeds the linear range. The quality control results were acceptable. MS and %RPD recoveries were within the control limits.


John DeWald
Project Manager

enclosures

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U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

3561-01

Lab Name: S_CUBED Contract: 32359-79

Lab Code: S3 Case No.: 92451 SAS No.: SDG No.: 3561

Matrix (soil/water): SOIL Lab Sample ID: 3561-01

Level (low/med): LOW Date Received: 02/20/93

% Solids: 90.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11600	-		P
7440-36-0	Antimony	5.4	B	N	P
7440-38-2	Arsenic	6.1	-	N	F
7440-39-3	Barium	96.1	-		P
7440-41-7	Beryllium	0.69	B		P
7440-43-9	Cadmium	1.8	-		P
7440-70-2	Calcium	12200	-		P
7440-47-3	Chromium	17.1	-		P
7440-48-4	Cobalt	11.6	-		P
7440-50-8	Copper	28.8	-		P
7439-89-6	Iron	22900	-		P
7439-92-1	Lead	21.3	-		F
7439-95-4	Magnesium	6970	-		P
7439-96-5	Manganese	369	-		P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	16.9	-		P
7440-09-7	Potassium	2160	-		P
7782-49-2	Selenium	0.52	B		F
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	181	B		P
7440-28-0	Thallium	0.66	U	N	F
7440-62-2	Vanadium	46.4	-		P
7440-66-6	Zinc	103	-		P

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Color After: Clarity After: Artifacts:

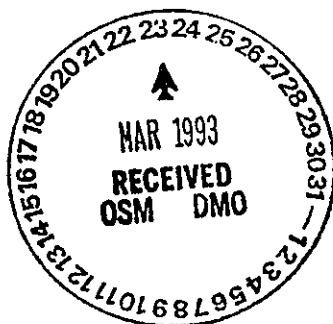
Comments:

B07KR7

FORM I - IN

7/88

LABORATORY: S-CUBED
 CLIENT: WHC
 PROJECT: 92-451
 LOT #: 3561
 FILE #: AN13561
 DISK #: AN11123
 METHOD NO.: 300.0
 UNIT: MG/KG



DATA REVIEWER: *UN 3/11/93*
 PROJECT REVIEWER:
 CHARGE #: 32359-79
 DATE SAMPLED: 02/16/93
 DATE RECEIVED: 02/23/93
 PREP DATE: 03/08/93
 DATE ANALYZED: 03/09/93
 SAMPLE TYPE: SOIL

LAB ID	F	Cl	NO2	Br	NO3	P04	SO4
3561-01	1.42	6.35	<0.2	<0.6	63.2	4.58	23.7

All QC data were acceptable. The sample of 9 gm was leached into 45 mL DI type II water prior to IC analysis. RPD and MS recovery were within the control limits.

S - CUBED

Trace Inorganics Report

Client: WHC
Project: 92-451
Sampling Date: 02/16/93

Analyst: GHT
Review: un 3/11/93
Receipt. Date: 02/24/93

Analyte: CR VI

[illegible]

Method Detection Limit: 5.000 ug/L
Preparation Method: 317 L N HACH 7196
Analytical Method: 317 L N HACH SW-846 Method 7196
Preparation Date: 02/24/93
Analysis Date: 02/25/93

217

UN = Units = (A=mg/kg B=ug/L C=mg/L) MT = Matrix = (S=Soil W=Water)

Comments: All GC data were acceptable. 20 gm of soil was leached into 100 mL DI type II water prior to analysis. The sample was required 100x dilution due to matrix interferences. RPD and MS recovery were within the criteria.

S - CUBED

Trace Inorganics Report

Client: WHC
Project: 92-451
Sampling Date: 02-16-93

Analyst: CIN
Review: 03/02/93
Receipt. Date: 02-20-93

Analyte: NO3/NO2

[illegible]

Method Detection Limit: 0.100 mg/L
Preparation Method: 353.3
Analytical Method: 353.3
Preparation Date: 02-24-93
Analysis Date: 02-24-93

UN = Units = (A=mg/kg B=ug/L C=mg/L) MT = Matrix = (S=Soil W=Water)

Comments: All CrC data were acceptable. RPD and MS were within the control limit. The sample was diluted 2X due to high concentration level exceeds the linear range.

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: General Chemistry Analysis Data Validation Summary for 3561-SCU-111

INTRODUCTION

This memo presents the results of data validation on data package 3561-SCU-111 consisting of one soil sample submitted for anions, hexavalent chromium, and nitrate+nitrite as N. The sample was analyzed by the S-Cubed laboratory using routine laboratory protocols. The sample identification number, collection date, and sample media is described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07KR7	02/16/93	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met for all analyses.

Completeness. The data package was complete for all requested analyses. A total of one (1) sample was validated in this data set with a total of nine (9) determinations reported. Out of the nine (9) determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

There were no major deficiencies identified during validation.

MINOR DEFICIENCIES

The holding time of 2 days was exceeded for ortho-phosphate; therefore, the sample result was qualified as estimated (J).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc.

RE: General Chemistry Analysis Data Validation Summary for 3561-SCU-111

INTRODUCTION

This memo presents the results of data validation on data package 3561-SCU-111 consisting of one soil sample submitted for anions, hexavalent chromium, and Nitrate + Nitrite as N analyses. The sample was analyzed by the S-Cubed laboratory using routine laboratory protocols. The sample identification number, collection date, and sample media is described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07KR7	02/16/93	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met for all analyses.

Completeness. The data package was complete for all requested analyses. A total of one (1) sample was validated in this data set with a total of nine (9) determinations reported. Out of the nine (9) determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

There were no major deficiencies identified during validation.

MINOR DEFICIENCIES

The holding time of 2 days was exceeded for ortho-phosphate; therefore, the sample result was qualified as estimated (J).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). The data are usable for decision making purposes.
- U - Indicates the analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ - Indicates the analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- BJ - Indicates the analyte was analyzed for and detected at a concentration greater than the IDL but less than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.
- J - Indicates the analyte was analyzed for and detected at a concentration greater than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.
- UR - Indicates the analyte was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R - Indicates the analyte was analyzed and detected; however, due to an identified quality control deficiency the data are unusable.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

LABORATORY: S-CUBED
 CLIENT: WMC
 PROJECT: 92-451
 LOT #: 3561
 FILE #: ANI3561
 DISK #: ANI1123
 METHOD NO.: 300.0
 UNIT: MG/KG



DATA REVIEWER: *an 3/11/93*
 PROJECT REVIEWER:
 CHARGE #: 32359-79
 DATE SAMPLED: 02/16/93
 DATE RECEIVED: 02/23/93
 PREP DATE: 03/08/93
 DATE ANALYZED: 03/09/93
 SAMPLE TYPE: SOIL

LAB ID	F	Cl	NO2	Br	NO3	PO4	SO4
3561-01	1.42	6.35	<0.2	<0.6	63.2	4.58	23.7
			u	u		J	

All EC data were acceptable. The sample of
 9 gm was leached into 45 mL DI-type II water prior
 to IC analysis. RPD and MS recovery were within
 the control limits.

5/21/93

Client: WHC
Project: 92-451
Sampling Date: 02/16/93

Analyst: GA
Review: WV 3/11/93
Receipt. Date: 02/24/93

[illegible]

Method Detection Limit: 5.000 ug/L
Preparation Method: 317 LN HACH 7196
Analytical Method: 317 LN HACH SW-846 Method 7196
Preparation Date: 02/24/93
Analysis Date: 02/25/93

~~12~~ 5/21/93

217

UN = Units = (A=mg/kg B=ug/L C=mg/L) MT = Matrix = (S=Soil W=Water)

Comments: All GC data were acceptable. 20 gm of soil was leached into 100 mL DI Type II water prior to analysis. The sample was required 100x dilution due to matrix interferences. RPD and MS recovery were within the criteria.

Analyst: UN
Review: 03/02/93
Receipt. Date: 02-20-93

[illegible]

~~15~~ 5/21/93

Comments: All C/C data were acceptable. RPD and MS were within the control limit. The sample was diluted 2x due to high concentration level exceeds the linear range.

ATTACHMENT 4
DATA VALIDATION SUPPORTING DOCUMENTATION

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: North Slope	REVIEWER: TMS	DATE: 5/21/93
LABORATORY: S-Cubed	CASE:	SDG: 3561-SCU-111
SAMPLES/MATRIX: B07KR7 / Soil		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		—	—	—
Cover Page		—	—	—
Traffic Reports/Chain-of-Custody		—	—	—
Sample Analysis Data Report Forms		—	—	—
Standards Data		—	—	—
QC Summary		—	—	—
Blanks Summary Report Forms		—	—	—
Spike Sample Recovery Report Forms		—	—	—
Duplicate Sample Analysis Report Forms		—	—	—
Laboratory Control Sample Report Forms		—	—	—
Raw Data		—	—	—
Ion Chromatograph Chromatograms		—	—	—
TOC and TOX Instrument Printouts		—	—	—
Laboratory Bench Sheets		—	—	—
Additional Data		—	—	—
Laboratory Sample Preparation Logs		—	—	—
Instrument Run Logs		—	—	—
Internal Laboratory Chain-of-Custody		—	—	—
Percent Solids Analysis Records		—	—	—
Reduction Formulae		—	—	—
Chemist Notebook Pages		—	—	—

Not
required
RC 5/21/93

2. HOLDING TIMES

Were all samples analyzed within holding times?

Yes No N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?

Yes No N/A

Are the correlation coefficients ≥ 0.995 ? * See page A7-5.

Yes No* N/A

Was a balance check conducted prior to the TDS analysis?

Yes No N/A

Was the titrant normality checked?

Yes No N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency?

Yes No N/A

Are ICV and CCV percent recoveries within control?

Yes No N/A

Are there calculation errors?

Yes No N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?

Yes No N/A

ACTION: Qualify all associated sample results for any analyte < 5 times the amount in any laboratory blank as nondetected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks?

Yes No N/A

ACTION: Qualify all sample results for any analyte < 5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits?

Yes No N/A 5/21

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are $> \text{CRQL}$, qualify the data as estimated (J). If the spike recovery is $< 30\%$ and the sample results are less than the IDL qualify the data as unusable (R).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits?

☒ Yes No N/A

Are there calculation errors?

Yes ☒ No N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or >120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits?

Yes No ☒ N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? * See page A7-5. ☒ Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits?

Yes No ☒ N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits?

Yes No ☒ N/A

ACTION: Note the results of the field split samples in the validation narrative.

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?

☒ Yes No N/A

Are instrument detection limits below the CRDL?

☒ Yes No N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

☒ Yes No N/A

Were project specific data quality objectives met for this analysis?

☒ Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

Correlation coefficient for Chloride is 0.9939 by linear regression. No qualifier will be applied.

Replicate results only are available for anions + NO_2/NO_3 and RPD values are within control limits. No qualifier will be applied.

Cr VI replicate results are both below the IDL and no precision qualifier will be applied.

~~RC~~ 5/21/93

HOLDING TIME SUMMARY - FORM B-1

3561-SCU-III


SDG: ✓	REVIEWER: T. Stapp	DATE: 5/21/93	PAGE 1 OF 1				
COMMENTS:							
FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B07KR7	Fl ⁻	2-16-93	3-8-93	3-9-93	20	21	None
↓	Cl ⁻	↓	↓	↓	↓	↓	↓
	NO ₂						
	NO ₃						
	Br						
	PO ₄						
↓	SO ₄	↓	↓	↓	↓	↓	None
	Cr VI						2-24-93
B07KR7	NO ₂ /NO ₃	2-16-93	2-24-93	2-24-93	7	7	None

B-1

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: Inorganics Analysis Data Validation Summary for 3561-SCU-111

INTRODUCTION

This memo presents the results of data validation on data package 3561-SCU-111 consisting of one soil sample submitted for inorganics analysis (ICP metals, AA metals and mercury). The sample was analyzed by the S-Cubed laboratory using CLP protocols. The sample identification number, collection date, and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07KR7	02/16/92	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1993) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met with the exception of antimony, arsenic, and thallium spike recoveries as summarized in the major and minor deficiency sections.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met for all analyses.

Completeness. The data package was complete for all requested analyses. A total of one (1) sample was validated in this data set with a total of 23 determinations reported. Out of the 23 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

The spike recovery for antimony was <30%. Therefore, the result for antimony in sample B07KR7 was qualified as unusable (R for the detected result).

MINOR DEFICIENCIES

Blanks

Selenium and antimony were detected in the laboratory blank. Therefore, the associated sample results that are less than five times the respective blank concentration have been qualified as undetected (U).

Matrix Spike

The matrix spike recovery for arsenic and thallium were below the 75% control limit, but greater than 30%. Therefore the sample result was qualified as estimated (J for detects, UJ for non-detects).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

- B -** Indicates the analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). The data are usable for decision making purposes.
- U -** Indicates the analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ -** Indicates the analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- BJ -** Indicates the analyte was analyzed for and detected at a concentration greater than the IDL but less than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.
- J -** Indicates the analyte was analyzed for and detected at a concentration greater than the CRQL. The associated value is estimated due to a deficiency identified during data validation. The data are usable for decision making purposes.
- UR -** Indicates the analyte was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R -** Indicates the analyte was analyzed and detected; however, due to an identified quality control deficiency the data are unusable.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

B-7

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

3561-01

Lab Name: S_CUBED Contract: 32359-79

Lab Code: S3 Case No.: 92451 SAS No.: SDG No.: 3561

Matrix (soil/water): SOIL Lab Sample ID: 3561-01

Level (low/med): LOW Date Received: 02/20/93

% Solids: 90.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11600			P
7440-36-0	Antimony	5.4	B	N	P
7440-38-2	Arsenic	6.1		N	F
7440-39-3	Barium	96.1			P
7440-41-7	Beryllium	0.69	B		P
7440-43-9	Cadmium	1.8			P
7440-70-2	Calcium	12200			P
7440-47-3	Chromium	17.1			P
7440-48-4	Cobalt	11.6			P
7440-50-8	Copper	28.8			P
7439-89-6	Iron	22900			P
7439-92-1	Lead	21.3			F
7439-95-4	Magnesium	6970			P
7439-96-5	Manganese	369			P
7439-97-6	Mercury	0.11	U		CV
7440-02-0	Nickel	16.9			P
7440-09-7	Potassium	2160			P
7782-49-2	Selenium	0.52	B		F
7440-22-4	Silver	2.0	U		P
7440-23-5	Sodium	181	B		P
7440-28-0	Thallium	0.66	U	N	F
7440-62-2	Vanadium	46.4			P
7440-66-6	Zinc	103			P

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

B07KR7 Cyanide was not analyzed. 5/21/93

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: <u>North Slope</u> <u>-200-BP</u> <u>TS 5/21</u>			REVIEWER: <u>TMS</u>	DATE: <u>5/21/93</u>
LABORATORY: <u>S-Cubed</u>		CASE:	SDG: <u>3561-SCU-</u> III	
SAMPLES/MATRIX: <u>B07KR7 / Soil</u>				

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Case Narrative		—	—	—
Cover Page		—	—	—
Traffic Reports		—	—	—
Sample Data		—	—	—
Inorganic Analysis Data Sheets		—	—	—
Standards Data		—	—	—
Initial and Continuing Calibration Verification		—	—	—
CRDL Standard for AA and ICP		—	—	—
QC Summary		—	—	—
Blanks		—	—	—
ICP Interference Check Summary		—	—	—
Spike Sample Recovery		—	—	—
Post-Digestion Spike Sample Recovery		—	—	—
Duplicate		—	—	—
Laboratory Control Sample		—	—	—
Standard Addition Results		—	—	—
ICP Serial Dilutions		—	—	—
Instrument Detection Limits		—	—	—
ICP Interelement Correction Factors		—	—	—
ICP Linear Ranges		—	—	—
Preparation Log		—	—	—
Analysis Run Log		—	—	—
Raw Data		—	—	—
ICP Raw Data		—	—	—
Furnace AA Raw Data		—	—	—
Mercury Raw Data		—	—	—
Cyanide Raw Data		—	—	—
Additional Data		—	—	—
Internal laboratory chain-of-custody		—	—	—
Laboratory Sample Preparation Records		—	—	—

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Percent Solids Analysis Records		—	—	—
Reduction Formulae		—	—	—
Instrument Run Logs		—	—	—
Chemist Notebook Pages		—	—	—

2. HOLDING TIMES

Have all samples been analyzed within holding times?

☒ Yes No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for nondetects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?

* See note, page A6-6.
☒ Yes No N/A

Are the correlation coefficients ≥ 0.995 ?

☒ Yes No N/A

Was a midrange cyanide standard distilled?

Yes No ☒ N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results >IDL as estimated (J) and results <IDL as estimated (UJ), if the correlation coefficient is <0.995 or the laboratory did not distill the midrange cyanide standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control?

☒ Yes No N/A

Are there calculation errors?

Yes ☒ No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency?

☒ Yes No N/A

Are the AB solution %R values within control?

☒ Yes No N/A

Are there calculation errors?

Yes ☒ No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?

☒ Yes

No

N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations < 10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks?

Yes

No

☒ N/A

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits?

Yes

☒ No

N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is > 125% and sample results are <IDL no qualification is required. If spike recovery is > 125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits?

☒ Yes

No

N/A

Are there calculation errors?

Yes

☒ No

N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results >IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results <IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results >IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results <IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits?

Yes

No

N/A

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable?

Yes

No

N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable?

Yes

No

N/A

Is there evidence of negative interference?

Yes

No

N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits?

Yes

No

N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits?

Yes

No

N/A

ACTION: Note the results of the field split samples in the validation narrative.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections?

Yes

No

N/A

Are applicable duplicate injection RSD values within control?

Yes

No

N/A

If no, were samples rerun once as required?

Yes

No

N/A

Does the RSD for the rerun fall within the control limits?

Yes

No

N/A

Were analytical spike recoveries within the control limits?

Yes

No

N/A

If no, were MSA analyses performed when required?

Yes

No

☒ N/AAre MSA correlation coefficients ≥ 0.995 ?

Yes

No

☒ N/A

If no, was a second MSA analysis performed?

Yes

No

☒ N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for nondetects). If the analytical spike recovery is $< 40\%$ qualify detects as estimated (J). If the analytical spike recovery is $\geq 10\%$ but $< 40\%$, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is $< 10\%$, reject all nondetects (R). If the sample absorbance is $< 50\%$ of the analytical spike absorbance and the analytical spike recovery is $< 85\%$ or $> 115\%$, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correlation coefficient was < 0.995 , qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?

☒ Yes

No

N/A

Are results within the calibrated range of the instruments and within the linear range of the ICP?

☒ Yes

No

N/A

Are all detection limits below the CRQL?

☒ Yes

No

N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

☒ Yes

No

N/A

Were project specific data quality objectives met for this analysis?

☒ Yes

No

N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

Mercury Standard set did not have a CRDL Standard run @ 0.2 per requirements of the validation procedures.

~~JS~~ 5/21/93

3561-SCU-111

5/21/93

ACCURACY DATA SUMMARY - FORM B-4

[illegible]


WHC-SD-EN-SPP-002, Rev. 1

B-4

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: Organophosphorus Pesticide Analysis Data Validation Summary for 3561-SCU-111

INTRODUCTION

This memo presents the results of data validation on data package 3561-SCU-111 consisting of one soil sample submitted for orthophosphate pesticides analysis. The sample was analyzed by the S-Cubed laboratory using EPA method 8140. The sample identification number, collection date, and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07KR7	02/16/93	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one (1) sample was validated in this data set with a total of 21 determinations reported. Out of the 21 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

The were no major deficiencies identified during validation.

MINOR DEFICIENCIES

Calibrations

The initial calibration relative standard deviation (%RSD) of 20% was exceeded for m-aziphos and coumaphos. Therefore, results for these compounds in sample B07KR7 were qualified as estimated (J for detects, UJ for non-detects).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U - Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR - Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R - Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ - Indicates presumptive evidence of a compound at an estimated value.
- N - Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7[illegible]

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

1D
PESTICIDE SOIL ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7

Lab Name: S-CUBED Contract: 32359-79
 Lab Code: S3 Case No.: 92-451 SAS No.: SDG No.: 3561
 Matrix: (soil/water) SOIL Lab Sample ID: 3561-01
 Sample wt/vol: 30 (g/ml) G Lab File ID: B0309-6DB1701018
 %Moisture: 9.41 decanted: (Y/N) N Date Received: 02/20/93
 Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 02/23/93
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 03/10/93
 Injection Volume: 1.00 (uL) Dilution Factor: 1.00
 GPC Cleanup: (Y/N) N pH: 8.84 Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
 (ug/L or ug/Kg) ug/kg Q

115-90-2	Fensulfothion	91.7	U
13194-48-4	Ethoprop	18.4	U
150-50-5	Merphos	45.9	U
2921-88-2	Chlorpyrifos	18.4	U
298-00-0	Parathion-methyl	45.9	U
298-02-2	Phorate	18.4	U
298-04-4	Disulfoton	18.4	U
299-84-3	Ronnel	18.4	U
300-76-5	Naled	91.7	U
327-98-0	Trichloronate	36.7	U
333-41-5	Diazinon	18.4	U
34843-46-4	Tokuthion(Prothiofos)	18.4	U
35400-43-2	Bolstar(Sulprophos)	45.9	U
55-38-9	Fenthion	18.4	U
56-72-4	Coumaphos	45.9	U
62-73-7	Dichlorvos	18.4	U
7786-34-7	Mevinphos	36.7	U
8065-48-3	Dematon-O	68.8	U
8065-48-3A	Dematon-P	68.8	U
86-50-0	Azinphos methyl	114	U
961-11-5	Stiropfos(Tetrachlorvinphos)	36.7	U

UJ

UJ

FORM I PEST

6/3/93

3/90

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

PROJECT: North Stone ERA	REVIEWER: GJ	DATE: 6/3/93
LABORATORY: S-Cubed	CASE: 92-451	SDG: 3561
SAMPLES/MATRIX: soil BTRR7		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	<i>not necessary GJ 6/3/93</i>	___	___	___
Data Summary		___	___	___
Chain of Custody Forms		___	___	___
Sample Analysis Request		___	___	___
QC Summary		___	___	___
Surrogate Recovery		___	___	___
MS/MSD Recovery		___	___	___
Method Blank Summary		___	___	___
Sample Data				
Sample Results		___	___	___
Chromatograms for all samples/extracts		___	___	___
Quantitation sheets for all samples/extracts		___	___	___
Extraction data sheets for all samples/extracts		___	___	___
Instrument time/run logs for all samples/extracts		___	___	___
Standards Data				
Initial Calibration standard concentrations		___	___	___
Initial Calibration summary of RRF/RSD data		___	___	___
Chromatograms for all initial cal. standards		___	___	___
Quantitation sheets for all initial cal. standards		___	___	___
Instrument time/run logs for all samples/extracts		___	___	___
Calibration standard traceability data		___	___	___
Raw QC Data				
Blanks				
Laboratory Blank results		___	___	___
Chromatograms for all laboratory blanks		___	___	___
Quantitation reports for all laboratory blanks		___	___	___
Matrix Spike/Matrix Spike Duplicates				
MS/MSD Results		___	___	___
Chromatograms		___	___	___
Quantitation reports		___	___	___

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Additional Data				
Moisture/% Solids data sheets	<i>not necessary</i>	—	—	—
Calculation formulae	<i>6/13/93</i>	—	—	—
Instrument Run/Time Logs		—	—	—
Chemist notebook pages		—	—	—
Sample preparation sheets		—	—	—

2. HOLDING TIMES

Were all samples extracted within holding times?

☒ Yes No N/A

Were all samples analyzed within holding times?

☒ Yes No N/A

ACTION: If the extraction or analytical holding times were exceeded, but not by a factor of two, qualify all affected results as estimated (J for detects and UJ for nondetects). Otherwise, reject all nondetects (R) and qualify all detects as estimated (J).

3. INSTRUMENT CALIBRATION

3.1 INITIAL CALIBRATION

Was an initial calibration conducted prior to sample analysis?

☒ Yes No N/A

Are all RSD values <20%?

Yes ☒ No N/A

See comment 1

ACTION: If the RSD criteria were not met, qualify all results as estimated (J for detects and UJ for nondetects).

3.2 CONTINUING CALIBRATION

Have continuing calibrations been conducted at the proper frequency?

☒ Yes No N/A

Are the ^{70%}RRFs within $\pm 15\%$ of the initial calibration average RF?

☒ Yes No N/A

Are the RT values for the calibration compounds within the retention time windows?

☒ Yes No N/A

ACTION: If the percent difference criteria or retention time windows are not met, qualify all associated data as estimated (J for detects, UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed at least one method blank per matrix in the sample batch?

Yes ☒ No N/A

Are target compounds present in the laboratory blanks?

Yes ☒ No ☐ N/A

ACTION: Qualify all detected results in the samples that are < 5 times the amount in any laboratory blank as nondetects (U).

4.2 FIELD BLANKS

Are target compounds present in the field blanks?

Yes ☐ No ☒ N/A

ACTION: Qualify all detected results in the samples that are < 5 times the amount in any valid field blank as nondetects (U).

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification?

Yes ☒ No ☐ N/A ☒ 7/6/98

Are any surrogates nondetected?

Yes ☒ No ☐ N/A

ACTION: Surrogate recoveries out of specification will require qualification of all associated data as estimated (J for detects and UJ for nondetects). Surrogate recoveries that are 0% will require qualification of all detects as estimated (J) and the rejection of all nondetects (R).

5.2 MATRIX SPIKE RECOVERY

Has the laboratory conducted a MS/MSD analysis per matrix for the sample group?

Yes ☒ No ☐ N/A

Are there calculation or transcription errors?

Yes ☐ No ☒ N/A

Are MS recoveries within specification?

Yes ☒ No ☐ N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are performance audit sample results within the acceptance limits?

Yes No

N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are there any calculation or transcription errors?

Yes No

N/A

Are the RPD values within specification?

Yes

No

N/A

See comment 2

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and not the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are $> 5 \times \text{CRQL}$ qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATES

Are the field duplicate RPDs acceptable?

Yes No

N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are the field split RPDs acceptable?

Yes No

N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Are positive results within the retention time windows?

Yes No

N/A

Are positive results unaffected by interfering peaks?

Yes No

N/A

no hit detected

ACTION: If positive results are not within the retention time windows qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no potential interferences are present, report the CRQL and if the misidentified peak interferes with the potential detection of a target peak then the reported value is the quantitation limit and the result is qualified as estimated (UJ).

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory reported sample quantitation limits within 5xCRQL levels?

☒ Yes No N/A

Are there any calculation or transcription errors?

Yes ☒ No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and discuss in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

☒ Yes No N/A

Were project specific data quality objectives met for this analysis?

☒ Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

1. The %RSD for the initial calibration for m-aminophenol and o-aminophenol were 36.76 and 32.72% respectively. Compounds flagged as identified for Sample B07KRT.
2. The %RPD for B07KRT was 79%. Data was not qualified because of this.

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U - Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR - Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R - Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ - Indicates presumptive evidence of a compound at an estimated value.
- N - Indicates presumptive evidence of a compound.

24 0000

[illegible]

GE
PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: S-CUBED

Contract: 32359-79

Lab Code: S3

Case No.: 92-451

SAS No.: N/A

SDG No.: 3561

Instrument ID: GC6 HP5890

Level (x low): 1X 2X 4X 8X 16X

Column ID: DB1

ID: 0.53 (mm)

Date(s) Analyzed: 03/09/93 - 03/10/93

COMPOUND	IND1X	IND2X	IND4X	IND8X	IND16X	MEAN	%RSD
DICHLORVOS	4.201E+03	4.531E+03	5.100E+03	5.430E+03	6.358E+03	5.124E+03	16.39
ETHOPROP	3.268E+03	3.731E+03	4.404E+03	4.942E+03	(1)	4.086E+03	18.03
PHORATE	3.196E+03	3.418E+03	3.870E+03	4.572E+03	4.884E+03	3.988E+03	18.21
DIAZINON	4.245E+03	4.901E+03	5.283E+03	5.706E+03	6.090E+03	5.245E+03	13.64
M-PARATH	1.889E+03	1.989E+03	2.629E+03	(1)	(1)	2.167E+03	18.51
RONNEL	3.234E+03	3.270E+03	3.794E+03	3.813E+03	4.342E+03	3.691E+03	12.38
MERPHOS	(1)	(1)	2.320E+03	2.701E+03	3.105E+03	2.707E+03	14.49
FENSULFOTHION	↓	↓	1.713E+03	1.643E+03	2.303E+03	1.836E+03	17.22
SULPROFOS	↓	2.942E+03	4.682E+03	4.237E+03	4.640E+03	4.125E+03	17.73
M-AZINPHOS	↓	(1)	7.951E+02	1.542E+03	1.745E+03	1.361E+03	36.26
COUMAPHOS	↓	↓	1.501E+03	1.931E+03	2.841E+03	2.091E+03	32.72
MEVINPHOS	↓	↓	2.393E+03	3.091E+03	3.383E+03	2.756E+03	17.21
DEMETON-O	1.439E+03	1.654E+03	1.839E+03	1.942E+03	2.098E+03	1.794E+03	14.26
NALED	2.632E+03	2.903E+03	3.233E+03	3.371E+03	(1)	3.035E+03	10.96
DEMETON-S	(1)	(1)	1.246E+03	1.492E+03	1.759E+03	1.497E+03	17.12
DISULFOTON	3.904E+03	4.118E+03	4.670E+03	5.142E+03	5.371E+03	4.641E+03	13.63
FENTHION	1.796E+03	2.203E+03	2.703E+03	2.875E+03	2.992E+03	2.514E+03	19.96
CHLORPYRIFOS	3.991E+03	4.052E+03	5.017E+03	4.930E+03	5.222E+03	4.642E+03	12.43
TRICHLORONATE	1.524E+03	1.488E+03	1.696E+03	1.942E+03	1.992E+03	1.728E+03	13.44
TETRACHLORVINP	1.879E+03	1.853E+03	2.219E+03	2.661E+03	2.470E+03	2.216E+03	16.08
TOKUTHION	4.439E+03	4.638E+03	4.849E+03	4.665E+03	4.799E+03	4.678E+03	3.43
ETHION	5.350E+03	5.224E+03	6.268E+03	6.593E+03	7.176E+03	6.122E+03	13.56

07
6/3/93

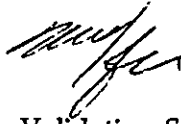
FORM VI PEST-2

11 (1) POINTS NOT USED BECAUSE OF PROBLEMS WITH LINEARITY.

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: Organochlorine Herbicide Analysis Data Validation Summary for 3561-SCU-111

INTRODUCTION

This memo presents the results of data validation on data package 3561-SCU-111 consisting of one soil sample submitted for organochlorine herbicide analysis. The sample was analyzed by the S-Cubed laboratory using EPA method 8150. The sample identification number, collection date, and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07KR7	02/16/93	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of 10 determinations reported. Out of the 7 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

There were no major deficiencies identified requiring rejection of the data.

MINOR DEFICIENCIES

Blanks

2,4-DB was identified in the blank at 490 ug/kg. Therefore, the 2,4-DB result in sample B07KR7, at a concentration of 1210 ug/kg, has been qualified as undetected (U).

Holding Times

The extraction holding time was exceeded for sample B07KR7, therefore all sample results were qualified as estimated (J for detects, UJ for non-detects).

Compound Identification

The percent difference (%D) between the quantitation and confirmation columns exceeded the limit of 25% for compounds 2,4-D and 2,4-DB. Therefore, sample results were qualified as estimated (J for detects, UJ for non-detects).

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B -** Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U -** Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ -** Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J -** Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR -** Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R -** Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ -** Indicates presumptive evidence of a compound at an estimated value.
- N -** Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7[illegible]

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

1D
HERBICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7RXN

Lab Name: S-CUBED Contract: 32359-79
Lab Code: S3 Case No.: 92-451 SAS No.: SDG No.: 3561
Matrix: (soil/water) SOIL Lab Sample ID: 3561-01RXN
Sample wt/vol: 5 (g/ml) G Lab File ID: H0310-4DB608024
%Moisture: 9.41 decanted: (Y/N) N Date Received: 02/20/93
Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 03/05/93
Concentrated Extract Volume: 5000 (uL) Date Analyzed: 03/11/93
Injection Volume: 1.00 (uL) Dilution Factor: 1.00
GPC Cleanup: (Y/N) N pH: 8.84 Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

94-75-7	2,4-D	245	-
94-82-6	2,4-DB	1210	B
93-76-5	2,4,5-T	27.5	U
93-72-1	2,4,5-TP	27.5	U
88-85-7	Dinoseb	27.5	U
120-36-5	Dichlorprop	55.1	U
1918-00-9	Dicamba	55.1	U

Q
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U

FORM I HERB

9/6/93

3/90

ATTACHMENT 4
DATA VALIDATION SUPPORTING DOCUMENTATION

HERBICIDE DATA VALIDATION CHECKLIST - FORM A-4

PROJECT: <i>North Slope ERA</i>	REVIEWER: <i>CJ</i>	DATE: <i>10/3/93</i>
LABORATORY: <i>S-Cubed</i>	CASE: <i>92-451</i>	SDG: <i>3561</i>
SAMPLES/MATRIX: <i>soil B07KR7</i>		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Case Narrative		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chain of Custody Forms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Analysis Request		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surrogate Recovery		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD Recovery		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Method Blank Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation sheets for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extraction data sheets for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instrument time/run logs for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standards Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Initial Calibration standard concentrations		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Initial Calibration summary of RKF/RSD data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms for all initial cal. standards		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation sheets for all initial cal. standards		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instrument time/run logs for all samples/extracts		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration standard traceability data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw QC Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laboratory Blank results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms for all laboratory blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation reports for all laboratory blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Matrix Spike/Matrix Spike Duplicates		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD Results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Additional Data				
Moisture/% Solids data sheets	<i>not necessary</i> <i>9/6/3/4/8</i>	—	—	—
Calculation formulae		—	—	—
Instrument Run/Time Logs		—	—	—
Chemist notebook pages		—	—	—
Sample preparation sheets		—	—	—

2. HOLDING TIMES

Were all samples extracted within holding times?

Yes No N/A

Were all samples analyzed within holding times?

Yes No N/A

ACTION: If the extraction or analytical holding times were exceeded, but not by a factor of two, qualify all affected results as estimated (J for detects and UJ for nondetects). Otherwise, reject all nondetects (R) and qualify all detects as estimated (J).

3. INSTRUMENT CALIBRATION

3.1 INITIAL CALIBRATION

Was an initial calibration conducted prior to sample analysis?

Yes No N/A

Are all RSD values <20%?

Yes No N/A

ACTION: If the RSD criteria were not met, qualify all results as estimated (J for detects and UJ for nondetects).

3.2 CONTINUING CALIBRATION

Have continuing calibrations been conducted at the proper frequency?

Yes No N/AAre the RRFs within $\pm 15\%$ of the initial calibration average RF?Yes No N/A

Are the RT values for the calibration compounds within the retention time windows?

Yes No N/A

ACTION: If the percent difference criteria or retention time windows are not met, qualify all associated data as estimated (J for detects, UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed at least one method blank per matrix in the sample batch?

Yes No N/A

Are target compounds present in the laboratory blanks?

☒ Yes No N/A

ACTION: Qualify all detected results in the samples that are < 5 times the amount in any laboratory blank as nondetects (U).

4.2 FIELD BLANKS

Are target compounds present in the field blanks?

Yes No ☒ N/A

ACTION: Qualify all detected results in the samples that are < 5 times the amount in any valid field blank as nondetects (U).

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification?

9/6/99 ☒ Yes ☒ No N/A

Are any surrogates nondetected?

Yes ☒ No N/A

ACTION: Surrogate recoveries out of specification will require qualification of all associated data as estimated (J for detects and UJ for nondetects). Surrogate recoveries that are 0% will require qualification of all detects as estimated (J) and the rejection of all nondetects (R).

5.2 MATRIX SPIKE RECOVERY

Has the laboratory conducted a MS/MSD analysis per matrix for the sample group?

☒ Yes No N/A

Are there calculation or transcription errors?

Yes No N/A

Are MS recoveries within specification?

Yes ☒ No N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are performance audit sample results within the acceptance limits?

Yes

No

N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are there any calculation or transcription errors?

Yes

No

N/A

Are the RPD values within specification?

Yes

No

N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and not the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are $> 5 \times \text{CRQL}$ qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATES

Are the field duplicate RPDs acceptable?

Yes

No

N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are the field split RPDs acceptable?

Yes

No

N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Are positive results within the retention time windows?

*See Comment 3*Yes

No

N/A

Are positive results unaffected by interfering peaks?

Yes

No

N/A

ACTION: If positive results are not within the retention time windows qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no potential interferences are present, report the CRQL and if the misidentified peak interferes with the potential detection of a target peak then the reported value is the quantitation limit and the result is qualified as estimated (UJ).

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory reported sample quantitation limits within 5xCRQL levels?

☒ Yes No N/A

Are there any calculation or transcription errors?

Yes ☒ No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and discuss in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

☒ Yes No N/A

Were project specific data quality objectives met for this analysis?

☒ Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

1. Recoveries for 2,4-D were 0 for the spike & spike duplicate.

2. First extraction sheet in which there were problems was submitted (2/23/93). The re-extraction sheet was not provided (03/05/93).

3. The percent Difference between columns is 775% for both 2,4-D and 2,4-DB for sample E207KR7. The results for will be qualified as J or UJ.

HOLDING TIME SUMMARY - FORM B-1

[illegible]

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

[illegible]

10A
HERBICIDE IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.

B07KR7RX

Lab Name: S-CUBED

Contract: 32359-79

SDG No.: 3561

Lab Code: S3

Case No. : 92-451

SAS No.:

Lab Sample ID: 3561-01RX

Date(s) Analyzed: 03/11/93 03/11/93

Instrument ID (1): 4

Instrument ID (2): 4

GC Column(1): DB608 ID: 0.53 (mm)

GC Column(2): DB1701 ID: 0.53 (mm)

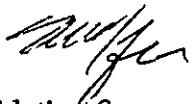
[illegible]

5/13/93

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: Organochlorine Pesticides/PCB Data Validation Summary for 3561-SCU-111

INTRODUCTION

This memo presents the results of data validation on data package 3561-SCU-111 consisting of one soil sample submitted for organochlorine pesticides/PCB analysis. The sample was analyzed by the S-Cubed laboratory using CLP protocols. The sample identification number, collection date, and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07KR7	02/16/93	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met, however, the reported values were not adjusted to reflect the extraction activities as noted in the minor deficiencies.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of 28 determinations reported. Out of the 28 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

There were no major deficiencies identified requiring rejection of the data.

MINOR DEFICIENCIES

Detection Limits

The detection limits reported did not reflect the GPC extraction that was performed. Therefore detection limits were multiplied by a factor of two on the result form.

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B -** Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U -** Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ -** Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J -** Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR -** Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R -** Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ -** Indicates presumptive evidence of a compound at an estimated value.
- N -** Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

1D
PESTICIDE SOIL ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7

Lab Name: S-CUBED Contract: 32359-79
 Lab Code: S3 Case No.: 92-451 SAS No.: SDG No.: 3561
 Matrix: (soil/water) SOIL Lab Sample ID: 3561-01
 Sample wt/vol: 30 (g/ml) G Lab File ID: R0224-9DB608075
 %Moisture: 9.41 decanted: (Y/N) N Date Received: 02/20/93
 Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 02/23/93
 Concentrated Extract Volume: 10000 (uL) Date Analyzed: 03/05/93
 Injection Volume: 1.00 (uL) Dilution Factor: 1.00
 GPC Cleanup: (Y/N) Y pH: 8.84 Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg Q

319-84-6	alpha-BHC	1.88 3.8	U
319-85-7	beta-BHC	1.88 3.8	U
319-86-8	delta-BHC	1.88 3.8	U
58-89-9	gamma-BHC (Lindane)	1.88 3.8	U
76-44-8	Heptachlor	1.88 3.8	U
309-00-2	Aldrin	1.88 3.8	U
1024-57-3	Heptachlor epoxide	1.88 3.8	U
959-98-8	Endosulfan I	1.88 3.8	U
60-57-1	Dieldrin	3.64 7.3	U
72-55-9	4,4'-DDE	3.64 7.3	U
72-20-8	Endrin	3.64 7.3	U
33213-65-9	Endosulfan II	3.64 7.3	U
72-54-8	4,4'-DDD	3.64 7.3	U
1031-07-8	Endosulfan sulfate	3.64 7.3	U
50-29-3	4,4'-DDT	3.64 7.3	U
72-43-5	Methoxychlor	18.8 37.6	U
53494-70-5	Endrin ketone	3.64 7.3	U
7421-36-3	Endrin Aldehyde	3.64 7.3	U
5103-71-9	alpha-Chlordane	1.88 3.8	U
5103-74-2	gamma-Chlordane	1.88 3.8	U
8001-35-2	Toxaphene	1.88 37.6	U
12674-11-2	Aroclor-1016	36.4 72.8	U
11104-28-2	Aroclor-1221	72.8 145	U
11141-16-5	Aroclor-1232	36.4 72.8	U
53469-21-9	Aroclor-1242	36.4 72.8	U
12672-29-6	Aroclor-1248	36.4 72.8	U
11097-69-1	Aroclor-1254	36.4 72.8	U
11096-82-5	Aroclor-1260	36.4 72.8	U

FORM I PEST

3/90

6/6/93

ATTACHMENT 4
DATA VALIDATION SUPPORTING DOCUMENTATION

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: <i>North Slope ERA</i>	REVIEWER: <i>CJ</i>	DATE: <i>6/3/93</i>
LABORATORY: <i>S- Cubed</i>	CASE: <i>92-451</i>	SDG: <i>3561</i>
SAMPLES/MATRIX: <i>soil B07K27</i>		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for resubmittal.

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Case Narrative		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chain-of-Custody		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surrogate report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blank summary report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GC integration reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worksheets		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
UV traces from GPC		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GC/MS confirmation spectra		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standards Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides Evaluation Standards Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides/PCB Standards Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides/PCB identification		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides standard chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw QC Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blank analysis report forms and chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD report forms and chromatograms		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Data Package Item</u>	Present?:	Yes	No	N/A
Additional Data				
Moisture/% solids data sheets		—	—	—
Reduction formulae		—	—	—
Instrument time logs <i>not necessary</i>		—	—	—
Chemist notebook pages		—	—	—
Sample preparation sheets		—	—	—

2. HOLDING TIMES

Were all samples extracted within holding time? ☒ Yes No N/A

Were all samples analyzed within holding time? ☒ Yes No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? Yes No ☒ N/A

ACTION: If DDT retention time is ≤ 12 minutes and resolution is $< 25\%$ qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? Yes No ☒ N/A

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes No ☒ N/A

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns $\leq 20\%$? Yes No ☒ N/A

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all nondetects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns $\leq 20\%$? Yes No ☒ N/A

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated (J) and all nondetects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition, qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification?

Yes

No

(N/A)

ACTION: If DBC %D values are outside the limits and the shift is occurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC $\leq 10\%$?

Yes

No

(N/A)

Have all standards been analyzed within 72 h of any sample?

Yes

No

(N/A)

Has a 3-point calibration been conducted for DDT or toxaphene?

Yes

No

(N/A)

Have all standards been analyzed at the start of each 72-h sequence?

Yes

No

(N/A)

Have evaluation standards A, B, and C been analyzed within 72 h of any sample?

Yes

No

(N/A)

Has the confirmation standard mix been analyzed after every five samples?

Yes

No

(N/A)

Has evaluation standard B analyzed every 10 samples?

Yes

No

(N/A)

Are %D values for initial and subsequent standards $\leq 15\%$ for quantitation standards and $\leq 20\%$ for confirmation standards?

Yes

No

(N/A)

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72-h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable?

☒ Yes No N/A

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns $\leq 20.0\%$ ☒ Yes No N/A

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows?

☒ Yes No N/AACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (± 0.04 , ± 0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs?

☒ Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors $\leq 20\%$ ($\leq 10.0\%$ for the BHC series, DDT, endrin, and methoxychlor)?☒ Yes No N/A

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes?

☒ Yes No N/A

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes?

☒ Yes No N/A

ACTION: If the resolution criteria are not met reject positive sample results generated after a noncompliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows?

☒ Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the noncompliant standard within two times the retention time windows (± 0.04 , ± 0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and nondetect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes $\leq 25.0\%$?

☒ Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs $\leq 20.0\%$ ($\leq 30.0\%$ total combined)?

☒ Yes No N/A

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency?

☒ Yes No N/A

Has the laboratory analyzed a sulfur clean-up blank if required?

Yes No ☒ N/A

Has the laboratory analyzed instrument blanks at the required frequency?

Yes No ☒ N/A

Are target compounds present in the blanks?

Yes ☒ No N/A

ACTION: Qualify all associated positive results as nondetects (U) that are < 5 times the highest concentration in any acceptable blank.

4.2 FIELD BLANKS

Are target compounds present in the field blanks?

Yes No ☒ N/A

ACTION: If target compounds are present in the field blanks qualify all positive sample results < 5 times the highest valid field blank concentrations as nondetects (U) and note the results in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification?	Yes	<input checked="" type="radio"/> No	N/A
Do any samples show nondetects for surrogates?	Yes	<input checked="" type="radio"/> No	N/A
Are any method blank surrogates out of specification?	Yes	<input checked="" type="radio"/> No	N/A

ACTION: Qualify all associated sample results as estimated (J for detects and UJ for nondetects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated nondetects as unusable (R). If method blank surrogates are out of specification and sample surrogates are acceptable, no qualification is required however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has the laboratory analyzed a MS/MSD per matrix for the sample group?	<input checked="" type="radio"/> Yes	No	N/A
Are MS/MSD recoveries within specification?	<input checked="" type="radio"/> Yes	No	N/A
Are there any calculation or transcription errors?	Yes	<input checked="" type="radio"/> No	N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are performance audit sample results within the acceptance limits?	Yes	No	<input checked="" type="radio"/> N/A
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ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

Are the RPD values within specification?

☒ Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are $> 5 \times \text{CRQL}$ qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable?

Yes No ☒ N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable?

Yes No ☒ N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Do positive results meet the retention time window criteria?

Yes No ☒ N/A

Were positive results analyzed on dissimilar columns?

Yes No ☒ N/A

If dieldrin and DDE were reported was a 3% OV-1 column used for confirmation (2/88 SOW data only)?

Yes No ☒ N/A

Do retention times and relative peak height ratios match the expected patterns for multippeak compounds (PCB, toxaphene or chlordane)?

Yes No ☒ N/AHas GC/MS confirmation been conducted on sample extract concentrations > 10 ppm?Yes No ☒ N/A*no positive detects.*

ACTION: If positive results do not meet the retention time criteria qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and nondetected (UJ). If positive results were not confirmed on dissimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Are results and quantitation limits calculated properly?

Yes ☒ No ☐ N/A

See comment 1.

Has the laboratory reported the sample quantitation limits within 5xCRQL values?

☒ Yes ☐ No ☐ N/A

ACTION: If results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

☒ Yes ☐ No ☐ N/A

Were project specific data quality objectives met for this analysis?

☒ Yes ☐ No ☐ N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

1. The moisture δ was taken into consideration when calculating detection limits, however, the sample had been GPC'd. So the detection limits are 2 times the reported limits.


WHC-SD-EN-SPP-002, Rev. 1

B-1

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. 

RE: Semivolatile Organics Analysis Data Validation Summary for 3561-SCU-111

INTRODUCTION

This memo presents the results of data validation on data package 3561-SCU-111 consisting of one soil sample submitted for semivolatile organics analysis. The sample was analyzed by the S-Cubed laboratory using CLP protocols. The sample identification number, collection date, and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07KR7	02/16/93	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data set with a total of 64 determinations reported. Out of the 64 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

An aldol condensation product, 4-hydroxy-4-methyl-2-pentanone was detected in sample B07KR7 at 3400 ug/kg and was qualified as unusable (R).

MINOR DEFICIENCIES

There were no minor deficiencies identified during the validation.

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

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- R - Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ - Indicates presumptive evidence of a compound at an estimated value.
- N - Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

B-7

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7

Lab Name: S-CUBED Contract: 32359-79
 Lab Code: S3 Case No.: 92-451 SAS No.: SDG No.: 3561
 Matrix: (soil/water) SOIL Lab Sample ID: 3561-01
 Sample wt/vol: 30 (g/ml) G Lab File ID: W6101
 Level: (low/med) LOW Date Received: 02/20/93
 %Moisture: 9.41 decanted: (Y/N) N Date Extracted: 02/23/93
 Concentrated Extract Volume: 1000.00 (uL) Date Analyzed: 03/08/93
 Injection Volume: 1.00 (u/L) Dilution Factor: 1.00
 GPC Cleanup: (Y/N) Y pH: 8.84

CONCENTRATION UNITS:
 (ug/L or ug/Kg) ug/kg

CAS NO. COMPOUND Q

108-95-2	Phenol	730	U
111-44-4	bis(2-Chloroethyl) ether	730	U
95-57-8	2-Chlorophenol	730	U
541-73-1	1,3-Dichlorobenzene	730	U
106-46-7	1,4-Dichlorobenzene	730	U
95-50-1	1,2-Dichlorobenzene	730	U
95-48-7	2-Methylphenol	730	U
108-60-1	2,2'-oxybis(1-Chloropropane)	730	U
106-44-5	4-Methylphenol	730	U
621-64-7	N-Nitroso-di-n-propylamine	730	U
67-72-1	Hexachloroethane	730	U
98-95-3	Nitrobenzene	730	U
78-59-1	Isophorone	730	U
88-75-5	2-Nitrophenol	730	U
105-67-9	2,4-Dimethylphenol	730	U
111-91-1	bis(2-Chloroethoxy) methane	730	U
120-83-2	2,4-Dichlorophenol	730	U
120-82-1	1,2,4-Trichlorobenzene	730	U
91-20-3	Naphthalene	730	U
106-47-8	4-Chloroaniline	730	U
87-68-3	Hexachlorobutadiene	730	U
59-50-7	4-Chloro-3-methylphenol	730	U
91-57-6	2-Methylnaphthalene	730	U
77-47-4	Hexachlorocyclopentadiene	730	U
88-06-2	2,4,6-Trichlorophenol	730	U
95-95-4	2,4,5-Trichlorophenol	1800	U
91-58-7	2-Chloronaphthalene	730	U
88-74-4	2-Nitroaniline	1800	U
131-11-3	Dimethylphthalate	730	U
208-96-8	Acenaphthylene	730	U
606-20-2	2,6-Dinitrotoluene	730	U
99-09-2	3-Nitroaniline	1800	U
83-32-9	Acenaphthene	730	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7

Lab Name: S-CUBED Contract: 32359-79
Lab Code: S3 Case No.: 92-451 SAS No.: SDG No.: 3561
Matrix: (soil/water) SOIL Lab Sample ID: 3561-01
Sample wt/vol: 30 (g/ml) G Lab File ID: W6101
Level: (low/med) LOW Date Received: 02/20/93
%Moisture: 9.41 decanted: (Y/N) N Date Extracted: 02/23/93
Concentrated Extract Volume: 1000.00 (uL) Date Analyzed: 03/08/93
Injection Volume: 1.00 (uL) Dilution Factor: 1.00
GPC Cleanup: (Y/N) Y pH: 8.84

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NO. COMPOUND Q

51-28-5	2,4-Dinitrophenol	1800	U
100-02-7	4-Nitrophenol	1800	U
132-64-9	Dibenzofuran	730	U
121-14-2	2,4-Dinitrotoluene	730	U
84-66-2	Diethylphthalate	730	U
7005-72-3	4-Chlorophenyl-phenyl ether	730	U
86-73-7	Fluorene	730	U
100-01-6	4-Nitroaniline	1800	U
534-52-1	4,6-Dinitro-2-methylphenol	1800	U
86-30-6	N-Nitrosodiphenylamine (1)	730	U
101-55-3	4-Bromophenyl-phenylether	730	U
118-74-1	Hexachlorobenzene	730	U
87-86-5	Pentachlorophenol	1800	U
85-01-8	Phenanthrene	730	U
120-12-7	Anthracene	730	U
86-74-8	Carbazole	730	U
84-74-2	Di-n-butylphthalate	730	U
206-44-0	Fluoranthene	730	U
129-00-0	Pyrene	730	U
85-68-7	Butylbenzylphthalate	730	U
91-94-1	3,3'-Dichlorobenzidine	730	U
56-55-3	Benzo(a)anthracene	730	U
218-01-9	Chrysene	730	U
117-81-7	Bis(2-Ethylhexyl)phthalate	730	U
117-84-0	Di-n-octylphthalate	730	U
205-99-2	Benzo(b)fluoranthene	730	U
207-08-9	Benzo(k)fluoranthene	730	U
50-32-8	Benzo(a)pyrene	730	U
193-39-5	Indeno(1,2,3-cd)pyrene	730	U
53-70-3	Dibenz(a,h)anthracene	730	U
191-24-2	Benzo(g,h,i)perylene	730	U

Sample Number
BC7KR7

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT & Scan Number	Estimated Concentration (ug/l or ug/kg)
100183-42-2	2-ACETAMINOPHEN-4-HYDROXY-4-METH	BVA	6.96	3400780
2.	UNKNOWN	"	35.71	360 J
3.	"	"	36.66	330 J
4.	"	"	37.56	560 J
5.	UNKNOWN HYDROCARBON	"	37.43	340 J
6.				
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08/04/98

ATTACHMENT 4
DATA VALIDATION SUPPORTING DOCUMENTATION

SEMI-VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-2

PROJECT: North Slope ERFA	REVIEWER: GJ	DATE: 6/3/93
LABORATORY: S-Cubed	CASE: 92-451	SDG: 3561
SAMPLES/MATRIX: Soil BOKR7		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Case Narrative		—	—	—
Data Summary		—	—	—
Chain-of-Custody		—	—	—
QC Summary		—	—	—
Surrogate report		—	—	—
MS/MSD report		—	—	—
Blank summary report		—	—	—
GC/MS tuning report		—	—	—
Internal standard summary report		—	—	—
Sample Data		—	—	—
Sample reports		—	—	—
TIC reports for each sample		—	—	—
RIC reports for all samples		—	—	—
Raw and corrected spectra for all detected results		—	—	—
Raw and corrected library search data for all reported TIC		—	—	—
Quantitation and calculation data for all TIC		—	—	—
Standards Data		—	—	—
Initial calibration report		—	—	—
RIC and quantitation reports for initial calibration		—	—	—
Continuing calibration reports		—	—	—
RIC and quantitation reports for cont. calibrations		—	—	—
Internal standard summary report		—	—	—
Raw QC Data		—	—	—
Tuning report, spectra and mass lists		—	—	—
Blank analysis reports		—	—	—
TIC reports for all blanks		—	—	—
RIC and quantitation reports for blanks		—	—	—
Raw and corrected spectra for all detected results in blanks		—	—	—
Raw and corrected library search data for all reported TIC		—	—	—
Quantitation and calculation data for all TIC		—	—	—
MS/MSD report forms		—	—	—

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
RIC and quantitation reports for MS/MSD		—	—	—
Additional Data		—	—	—
Moisture/% solids data sheets		—	—	—
Reduction formulae		—	—	—
Instrument time logs		—	—	—
Chemist notebook pages		—	—	—
Sample preparation sheets		—	—	—

2. HOLDING TIMES

Were all samples extracted within holding time? ☒ Yes No N/A

Were all samples analyzed within holding time? ☒ Yes No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a DFTPP tune report present for each applicable 12h period? ☒ Yes No N/A

Do all tunes on all instruments meet the tuning criteria? ☒ Yes No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No ☒ N/A

Has the laboratory made any calculation or transcription errors? Yes ☒ No N/A

Have the proper significant figures been reported? ☒ Yes No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects and UJ for nondetects). If all tuning criteria are not met, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments? ☒ Yes No N/A

Are all RSD values $\leq 30\%$ (2/88 SOW)? Yes No ☒ N/A

Are all RRF values ≥ 0.05 (2/88 SOW)? Yes No ☒ N/A

Are all applicable RSD values $\leq 20.5\%$ (3/90 SOW)? ☒ Yes No N/A

Are all applicable RSD values $\leq 40\%$ (3/90 SOW)? Yes No ☒ N/A

Are all applicable RRF values within SOW limits (3/90 SOW)? ☒ Yes No N/A

Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)? ☒ Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed? ☒ Yes No N/A

Are all RRF values ≥ 0.05 (2/88 SOW)? Yes No ☒ N/A

Are all %D values $\leq 25\%$ (2/88 or 3/90 SOW)? ☒ Yes No N/A

Are all %D values $\leq 40\%$ (3/90 SOW)? Yes No ☒ N/A

Are all RRF values within SOW limits (3/90 SOW)? ☒ Yes No N/A

Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)? ☒ Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every extraction batch? *see comment 1*
☒ Yes No N/A

Are compounds reported in the laboratory blanks? ☒ Yes No N/A

ACTION: Qualify all sample results < 10 times the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is $< \text{CRQL}$. Qualify all remaining sample results < 5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are compounds reported in the field blanks?

Yes

No

N/A

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the results of the field blanks in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification?

glo/KP/88 Yes No

N/A

Are any surrogate recoveries $< 10\%$?

Yes

No

N/A

Are any method blank surrogate recoveries out of specification?

Yes

No

N/A

ACTION: Qualify all associated data as estimated (J for detects and UJ for nondetects) if at least two semivolatile surrogates are out of specification. If any surrogate is below 10% recovery qualify associated detected results as estimated (J) and associated nondetect results as unusable (R). If method blank surrogates are out of specification and associated sample surrogates are acceptable no qualification is required, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group?

Yes

No

N/A

Are MS/MSD recoveries within specification?

Yes

No

N/A

Are there any calculation errors?

Yes

No

N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the results for the performance audit samples within the acceptance limits?

Yes No

N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are all RPD values within specification?

Yes

No

N/A

Are there any calculation errors?

Yes

No

N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are $> 5 \times \text{CRQL}$ qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable?

Yes

No

N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable?

Yes

No

N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits?

Yes

No

N/A

Are retention times for any internal standard outside the ± 30 second windows established by the most recent calibration check?

Yes

No

N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects and UJ for nondetects. If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ± 0.06 relative retention time units of the associated calibration standard?

Yes No N/A

Are all ions at a relative intensity of $\geq 10\%$ in the standard spectra present in the sample spectra?

Yes No N/A

Do the relative intensities between the standard and sample spectra agree within 20%?

Yes No N/A

Have all ions $> 10\%$ in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?

Yes No N/A

Are molecular ions in the reference spectrum present in the sample spectrum?

Yes No N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R).

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standards for quantitation?

Yes No N/A

Are results and quantitation limits calculated properly?

Yes No N/A

Has the laboratory reported the sample quantitation limits within $5 \times \text{CRQL}$ values?

Yes No N/A

ACTION: If the quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?

Yes No N/A

Has the laboratory properly identified and coded all TIC?

Yes No N/A
See comment 2.

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

☒ Yes No N/A

Were project specific data quality objectives met for this analysis?

☒ Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

1. Bis(2-Ethylhexyl) phthalate was detected in the blank at 1000 ug/kg, but was not detected in the sample. No qualification is necessary.
2. An aldol condensation compound, 4-Hydroxy-4-methyl-2-pentanone was detected at 3400 ug/kg and was qualified as unusual (R)

HOLDING TIME SUMMARY - FORM B-1

[illegible]

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc. *moffet*

RE: Volatile Organic Analysis Data Validation Summary for 3561-SCU-111

INTRODUCTION

This memo presents the results of data validation on data package 3561-SCU-111 consisting of one soil sample submitted for volatile organic analysis. The sample was analyzed by the S-Cubed laboratory using CLP protocols. The sample identification number, collection date, and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07KR7	02/16/93	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one (1) sample was validated in this data set with a total of 33 determinations reported. Out of the 33 determinations reported, all determinations were deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

The were no major deficiencies identified during validation.

MINOR DEFICIENCIES

There were no minor deficiencies identified during validation.

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B - Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U - Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR - Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R - Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ - Indicates presumptive evidence of a compound at an estimated value.
- N - Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

[illegible]

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07KR7

Lab Name: S-CUBED	Contract: 32359-79
Lab Code: S3	Case No.: 92-451
Matrix: (soil/water) SOIL	SAS No.: SDG No.: 3561
Sample wt/vol: 5.00 (g/ml)G	Lab Sample ID: 3561-01
Level: (low/med) LOW	Lab File ID: CW101
%Moisture: not dec. 9.41	Date Received: 02/20/93
GC Column: PACK ID: 2.00 (mm)	Date Analyzed: 02/25/93
Soil Extract Volume: (uL)	Dilution Factor: 1.00
	Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
---------	----------	---	---

74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11	U
67-64-1	Acetone	8	J
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethyl Benzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

FORM I VOA

3/90

Sample Number
B07KR7

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1.	NO PIC'S FOUND	VOA		
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
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30.				

Cj 6/13/93

ATTACHMENT 4

DATA VALIDATION SUPPORTING DOCUMENTATION

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: <i>North Slope ERA</i>	REVIEWER: <i>g</i>	DATE: <i>6/3/93</i>
LABORATORY: <i>S-Cubed</i>	CASE: <i>92-451</i>	SDG: <i>3561</i>
SAMPLES/MATRIX: <i>Soil BOTKR7</i>		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

<u>Data Package Item</u>	Present?:	Yes	No	N/A
Case Narrative		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chain-of-Custody		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
QC Summary		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surrogate report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MS/MSD report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blank summary report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
GC/MS tuning report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal standard summary report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TIC reports for each sample		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RIC reports for all samples		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw and corrected spectra for all detected results		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw and corrected library search data for all reported TIC		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantitation and calculation data for all TIC		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standards Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Initial calibration report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RIC and quantitation reports for initial calibration		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Continuing calibration reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RIC and quantitation reports for cont. calibrations		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal standard summary report		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw QC Data		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tuning report, spectra and mass lists		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blank analysis reports		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TIC reports for all blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RIC and quantitation reports for blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw and corrected spectra for all detected results in blanks		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raw and corrected library search data for all reported TIC		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Quantitation and calculation data for all TIC		—	—	—
MS/MSD report forms		—	—	—
RIC and quantitation reports for MS/MSD		—	—	—
<i>not necessary ej 6/3/98</i>				
<u>Additional Data</u>				
Moisture/% solids data sheets		—	—	—
Reduction formulae		—	—	—
Instrument time logs		—	—	—
Chemist notebook pages		—	—	—
Sample preparation sheets		—	—	—

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time?

Yes No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h period? Yes No N/A

Do all tunes on all instruments meet the tuning criteria? Yes No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No N/A

Has the laboratory made any calculation or transcription errors? Yes No N/A

Have the proper significant figures been reported? Yes No N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for nondetects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments?

Yes No N/A

Are all RSD values $\leq 30\%$ (2/88 SOW)?

Yes No N/A

Are all RRF values ≥ 0.05 (2/88 SOW)?

Yes No N/A

Are all applicable RSD values $\leq 20.5\%$ (3/90 SOW)?

see comment 1 *9/6/13/93*
☒ Yes ☒ No N/A

Are all applicable RSD values $\leq 40\%$ (3/90 SOW)?

☒ Yes ☒ No N/A

Are all applicable RRF values within SOW limits (3/90 SOW)?

☒ Yes ☐ No N/A

Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)?

☒ Yes ☐ No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?

see comment 2
☒ Yes ☐ No N/A

Are all RRF values ≥ 0.05 (2/88 SOW)?

Yes ☐ No ☒ N/A

Are all %D values $\leq 25\%$ (2/88 or 3/90 SOW)?

Yes ☐ No ☒ N/A

Are all %D values $\leq 40\%$ (3/90 SOW)?

Yes ☐ No ☒ N/A

Are all RRF values within SOW limits (3/90 SOW)?

Yes ☐ No ☒ N/A

Are all erratic performance compound RRF values ≥ 0.01 (3/90 SOW)?

Yes ☐ No ☒ N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h period in which samples were analyzed?

☒ Yes ☐ No N/A
see comment 3

Are TCL compounds present in the laboratory blanks?

☒ Yes ☐ No N/A

ACTION: Qualify all sample results ≤ 10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is $< CRQL$. Qualify all remaining sample results ≤ 5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks?

Yes No

☒ N/A

ACTION: Qualify all detected sample results ≤ 5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification?

Yes

☒ No

N/A

Are any surrogate recoveries $< 10\%$?

Yes

☒ No

N/A

Are any method blank surrogate recoveries out of specification?

Yes

☒ No

N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but $> 10\%$. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10% . If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group?

☒ Yes

No

N/A

Are MS/MSD recoveries within specification?

☒ Yes

No

N/A

Are there any calculation errors?

Yes

☒ No

N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits?

Yes

No

N/A

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification?

Yes

No

N/A

Are there any calculation errors?

Yes

No

N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are $> 5 \times \text{CRQL}$ qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable?

Yes

No

N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable?

Yes

No

N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits?

Yes

No

N/A

Are retention times for any internal standard outside the ± 30 second windows established by the most recent calibration check?

Yes

No

N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ± 0.06 relative retention time units of the associated calibration standard?

9/6/3/43
☒ Yes ☒ No N/A

Are all ions at a relative intensity of $\geq 10\%$ in the standard spectra present in the sample spectra?

☒ Yes No N/A

Do the relative intensities between the standard and sample spectra agree within 20%?

☒ Yes No N/A

Have all ions $> 10\%$ in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?

☒ Yes No N/A

Are molecular ions present in the reference spectrum present in the sample spectrum?

☒ Yes No N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation?

☒ Yes No N/A

Are results and quantitation limits calculated properly?

☒ Yes No N/A

Has the laboratory reported the sample quantitation limits within 5xCRQL values?

☒ Yes No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?

☒ Yes No N/A

Has the laboratory properly identified and coded all TIC?

Yes No ☒ N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as nondetects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as nondetects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

☒ Yes No N/A

Were project specific data quality objectives met for this analysis?

☒ Yes No N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

1. The POKSD were > 20.5, only for the compounds that exhibit erratic behavior. No qualification of the data is necessary.

2. The initial calibration was run just prior to sample analysis, so a separate CCAD was not submitted.

3. The peak detected 2-butanone, however, it was not detected in the sample. No qualification of the data is necessary.

HOLDING TIME SUMMARY - FORM B-1

[illegible]

MEMORANDUM

TO: North Slope ERA Project QA Record

June 9, 1993

FR: Christina Jensen, Golder Associates Inc.

RE: Total Recoverable Petroleum Hydrocarbon Analysis Data Validation Summary for 3561-SCU-111

INTRODUCTION

This memo presents the results of data validation on data package 3561-SCU-111 consisting of one soil sample submitted for total recoverable petroleum hydrocarbon analysis. The sample was analyzed by the S-Cubed laboratory using EPA method 418.1. The sample identification number, collection date, and sample media are described in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA
B07KR7	02/16/93	SOIL

Data validation was conducted in accordance with the WHC statement of work (WHC 1991) and validation procedures (Bechtold 1992). Attachments 1 through 4 to this memo provide the data validation supporting documentation and a summary of the validated results.

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with no data correction necessary.

Detection Limits. Detection limit goals were met.

Completeness. The data package was complete for all requested analyses. A total of one (1) sample was validated in this data set with a total of one (1) determination reported. Out of the one (1) determination reported, it was deemed valid which results in a completeness of 100 percent. This completeness percentage meets the work plan objectives of 90%.

MAJOR DEFICIENCIES

There were no major deficiencies identified requiring rejection of the data.

MINOR DEFICIENCIES

There were no minor deficiencies identified requiring rejection of the data.

REFERENCES

WHC, 1993, Westinghouse Hanford Company, North Slope ERA Data Validation, Statement of Work, Revision 0, May 1993. Westinghouse Hanford Company, Richland, Washington.

Bechtold, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 1, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1
GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

- B -** Indicates the compound was analyzed for and detected in the associated blank. The "B" qualifier for organic data is applied by the laboratory only and is not applied by the data validators.
- U -** Indicates the compound was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory. The data are usable for decision making purposes.
- UJ -** Indicates the compound or analyte was analyzed for and not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit. The data are usable for decision making purposes.
- J -** Indicates the compound or analyte was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data are usable for decision making purposes.
- UR -** Indicates the compound was analyzed for and not detected; however, due to an identified quality control deficiency the data are unusable.
- R -** Indicates the compound was analyzed for and detected; however, due to an identified quality control deficiency the data are unusable.
- NJ -** Indicates presumptive evidence of a compound at an estimated value.
- N -** Indicates presumptive evidence of a compound.

ATTACHMENT 2
SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7[illegible]

ATTACHMENT 3
AS QUALIFIED DATA SUMMARY

Analyte: TRPH
 Method: 418.1
 Technique: IR Spec.
 DATE: 2/24/93
 Analyst: LC/EE
 Instr: P&E IR Spec.
 Case: 92-451
 Lot(s): 3561

Smpl Aliquot: 0.020 Kg or L
 Final Volume: 0.1 L

Concs: p.p.m.
 Reagent #1 20
 #2 40
 #3 80
 #4 160
 #5 300
 #6

Standards
 Source: S-CUBED/EL4250
 Corr. Coef. 0.99993

Detection Limit 20mg/kg

Std.	Abs	Conc
Blank	0	0
#1	0.037	20
#2	0.069	40
#3	0.135	80
#4	0.271	160
#5	0.51	300
#6		

S-Cubed Sample ID	Client Sample ID	Abs.	Conc. (ug/ml)	Dil. Factor	SAMPLE Conc.	Detection Limit	% Mois.	(mg/kg) Final CONC.
EBS0223	EBS0223	0	0.0000	1	0.0000	20	0	0
LCSS0223	LCSS0223	0.269	159.2353	1	796.1763	20	0	796
3561-01	B07KR7	0.022	13.0230	1	65.1148	20	9.41	72
3561-01REP	B07KR7REP	0.021	12.4310	1	62.1550	20	9.41	69
3561-01MS	B07KR7MS	0.304	179.9536	1	899.7680	20	9.41	993

02/24/93

ATTACHMENT 4 .

DATA VALIDATION SUPPORTING DOCUMENTATION

TRPH

HERBICIDE DATA VALIDATION CHECKLIST - FORM A-4

5/6/14/93

PROJECT: <i>North Slope ERA</i>	REVIEWER: <i>G</i>	DATE: <i>6/14/93</i>
LABORATORY: <i>S-Cubed</i>	CASE: <i>92-451</i>	SDG: <i>3561</i>
SAMPLES/MATRIX: <i>B07KR7 /soil</i>		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

<u>Data Package Item</u>	<u>Present?:</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Case Narrative		___	___	___
Data Summary		___	___	___
Chain of Custody Forms		___	___	___
Sample Analysis Request		___	___	___
QC Summary		___	___	___
Surrogate Recovery		___	___	___
MS/MSD Recovery		___	___	___
Method Blank Summary		___	___	___
Sample Data		___	___	___
Sample Results		___	___	___
Chromatograms for all samples/extracts		___	___	___
Quantitation sheets for all samples/extracts		___	___	___
Extraction data sheets for all samples/extracts		___	___	___
Instrument time/run logs for all samples/extracts		___	___	___
Standards Data		___	___	___
Initial Calibration standard concentrations		___	___	___
Initial Calibration summary of RRF/RSD data		___	___	___
Chromatograms for all initial cal. standards		___	___	___
Quantitation sheets for all initial cal. standards		___	___	___
Instrument time/run logs for all samples/extracts		___	___	___
Calibration standard traceability data		___	___	___
Raw QC Data		___	___	___
Blanks		___	___	___
Laboratory Blank results		___	___	___
Chromatograms for all laboratory blanks		___	___	___
Quantitation reports for all laboratory blanks		___	___	___
Matrix Spike/Matrix Spike Duplicates		___	___	___
MS/MSD Results		___	___	___
Chromatograms		___	___	___
Quantitation reports		___	___	___

not necessary
5/6/14/93

<u>Data Package Item</u>	<u>Present?;</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Additional Data				
Moisture/% Solids data sheets		—	—	—
Calculation formulae		—	—	—
Instrument Run/Time Logs		—	—	—
Chemist notebook pages		—	—	—
Sample preparation sheets		—	—	—

2. HOLDING TIMES

Were all samples extracted within holding times? ☒ Yes No N/A

Were all samples analyzed within holding times? ☒ Yes No N/A

ACTION: If the extraction or analytical holding times were exceeded, but not by a factor of two, qualify all affected results as estimated (J for detects and UJ for nondetects). Otherwise, reject all nondetects (R) and qualify all detects as estimated (J).

3. INSTRUMENT CALIBRATION

3.1 INITIAL CALIBRATION

Was an initial calibration conducted prior to sample analysis? ☒ Yes No N/A

Are all RSD values <20%? Yes No ☒ N/A

ACTION: If the RSD criteria were not met, qualify all results as estimated (J for detects and UJ for nondetects).

3.2 CONTINUING CALIBRATION

Have continuing calibrations been conducted at the proper frequency? Yes No ☒ N/A

Are the RRFs within $\pm 15\%$ of the initial calibration average RF? Yes No ☒ N/A

Are the RT values for the calibration compounds within the retention time windows? Yes No ☒ N/A

ACTION: If the percent difference criteria or retention time windows are not met, qualify all associated data as estimated (J for detects, UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed at least one method blank per matrix in the sample batch? ☒ Yes No N/A

Are target compounds present in the laboratory blanks? Yes No N/A

ACTION: Qualify all detected results in the samples that are < 5 times the amount in any laboratory blank as nondetects (U).

4.2 FIELD BLANKS

Are target compounds present in the field blanks? Yes No N/A

ACTION: Qualify all detected results in the samples that are < 5 times the amount in any valid field blank as nondetects (U).

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogates nondetected? Yes No N/A

ACTION: Surrogate recoveries out of specification will require qualification of all associated data as estimated (J for detects and UJ for nondetects). Surrogate recoveries that are 0% will require qualification of all detects as estimated (J) and the rejection of all nondetects (R).

5.2 MATRIX SPIKE RECOVERY

Has the laboratory conducted a MS/MSD analysis per matrix for the sample group? *MS only ok 9/6/4/92* Yes No N/A

Are there calculation or transcription errors? Yes No N/A

Are MS recoveries within specification? Yes No N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is > 5 times the spike concentration, no qualification is required, otherwise qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are performance audit sample results within the acceptance limits?

Yes No

N/A

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

MS only 9/6/14/93

Are there any calculation or transcription errors?

Yes

No

N/A

Are the RPD values within specification?

Yes

No

N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and not the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are $> 5 \times \text{CRQL}$ qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATES

Are the field duplicate RPDs acceptable?

Yes No

N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are the field split RPDs acceptable?

Yes No

N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Are positive results within the retention time windows?

Yes No

N/A

Are positive results unaffected by interfering peaks?

Yes No

N/A

ACTION: If positive results are not within the retention time windows qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no potential interferences are present, report the CRQL and if the misidentified peak interferes with the potential detection of a target peak then the reported value is the quantitation limit and the result is qualified as estimated (UJ).

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory reported sample quantitation limits within 5xCRQL levels?

☒ Yes No N/A

Are there any calculation or transcription errors?

Yes ☒ No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and discuss in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?

☒ Yes No N/A

Were project specific data quality objectives met for this analysis?

☒ Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

WHC-SD-EN-SPP-002, Rev. 1

[illegible]